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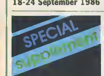
SPECIAL supplement

QL – LATEST DEVELOPMENTS

CST's Thor (see right) and Sandy's QLT machines compared

Plus QL news and reviews

The invasion of the games machines – p4



SOFTWARE

PC games at an Amstrad price See page 15

NEWS DESK

Atari launches its IBM compatibility chip

Settlement due in Amiga chip dispute



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18-24 September — Contents

SPECIAL SUPPLEMENT QL – LATEST DEVELOPMENTS

Quantum leaps: CST's Thor and Sandy's QLT keep the QL alive and leaping

Eye-Q – the best graphics package yet?

GigaBasic, *GigaDesk* programming aids and Wimp systems

Plus news of QL games, communications, joysticks, user groups, and more.

HARDWARE▶

◀SOFTWARE

GAMES▶

◀PROGRAMMING

REGULARS▶

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ABC

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Games machines are fighting back

GAMES machines, whether in the form of video consoles, or inexpensive computers primarily designed for games are suddenly fashionable again

Following the news that Ariolesoft is to import Sega's Master games console into the UK for Christmas (see *Popular Computing Weekly* September 4), the toy giant Mattel has announced that it will launch the Japanese Nintendo games machine here too

And even Memotech is getting in on the act with the announcement of a sub-£100 cassette based micro to rival Amstrad's Spectrum Plus 2, and the possibility of importing a Nintendo lookalike machine from Taiwan (see story below)

Mattel is importing and marketing Nintendo's Entertainment System (NES) in two different versions in Britain

The standard package will comprise the NES console and game controller A de luxe model will also be sold which also has a light gun controller and a robot to act as a second player The gun and robot will also be available separately

Ron Newbold of Mattel UK said "There will be a library of 37 games initially for the machine One series is for use with the robot, one specifically for the light gun and then there is an action series with games such as *Pinball* We'll also have sports games and arcade classics such as *Donkey Kong* and the *Super Mario Brothers* "

All games will be on cartridge Prices for the systems have yet to be finalised but will probably be around the £150 mark

Atari shows IBM chip

ATARI demonstrated its IBM co processor at the recent Personal Computer World show, but there is still no definite release date for the UK

The co-processor comprises the Intel 8088 chip and 512K Ram and attaches to Atari's ST machine via the direct memory access port Atari demonstrated the unit in a prototype casing similar to its hard disc units, but it will appear in custom made units when released

On its stand Atari demonstrated IBM PC software, such as *Multiplan*, *Lotus 1-2-3* and *Flight Simulator 2* running on the 1040 ST

The US price for the unit will be around $200 which translates to about £135

A spokesman for Atari said, " We are expecting the co-processor to arrive in UK in either October or November – certainly some time this autumn

Memotech dips under £100 with MTX Mk 2 launch

MEMOTECH is developing a new games micro, to be called the MTX Mk 2 It is apparently being developed in response to requests for a low-cost tape-based system

The Mk 2 will have 256K Ram, 16K video Ram and the package will include a six-pack of cassette games although specific titles have yet to be decided

The new machine will be compatible with the MTX 512 and can be upgraded to the new Memotech CP/M system It will have a composite TV port and cassette port, but no monitor or tape deck is included in the price which is likely to be £99 95

The machine is due to be launched this month and will be marketed and supported by a new company, Centaur Computer Services co-founded by Keith Hook of Syntaxsoft ex-Imagine director Mark Butler, and Ken Simmonds of Kenen Software

Keith Hook told *Popular Computing Weekly*, "We have been talking to the Tandy network of dealers about stocking the Mk 2 and they have been very positive

Centaur is also casting an eye at the games console market and is considering importing a Taiwanese Nintendo lookalike to sell in the UK at around £50 No firm arrangements have yet been made however

PC accounting

INTUITIVE Systems claims that ' it is as if the PC 1512 was built especially for *Intuitive-Solution* '

Intuitive-Solution is an applications development environment for PCs which takes advantage of the Amstrad PC's mouse and standard graphics screens

So enthused is Intuitive Systems by the PC 1512's launch that it is producing specific applications for use with *Intuitive-Solution* First off is *Intuitive Cash Book Accounting System*, which costs £99 (plus Vat)

Details from Intuitive Systems, Wye Lodge 6 High Street, Stevenage Herts Tel 0438 317966

Laskys to sell support service

HIGH street retailer Laskys is to sell a hotline support service for new computer users for £39 99 for a three month subscription The package is being operated by the Interlex software group and operates six days a week 9am–9pm weekdays and 9am–1pm on Saturday

The service is likely to be particularly attractive for purchasers of cheaper computers that don't come with a great deal of technical support as standard

Details from Laskys, Hardman House, The Hyde, Hendon, London NW9 6JJ (01 200 0444)

Diary Dates

SEPTEMBER

26–28 September
Electron and BBC Micro User Show
UMIST Manchester
Details Software hardware and peripherals for BBC machines
Price £3 adults, £2 children £1 discount for advance booking
Organiser Database Exhibitions, 061-456 8835

OCTOBER

3–5 October
The Amstrad Computer Show
Novotel London
Details Home and business software and hardware for the Amstrad range
Price £3 adults, £2 children £1 discount for advance booking
Organiser Database Exhibitions 061-456 8835

30–31 October
Hampshire Computer Fair
Guildhall Southampton
Details Business computers
Price Free entry by business registration
Organiser Testwood Exhibitions 0703 31557

NOVEMBER

7–9 November
Electron and BBC Micro User Show
New Horticultural Hall, Greycoat Street, London SW1
Details Hardware software and peripherals for the Electron BBC micro and Master series
Prices £3 adults £2 children, £1 discount for advance booking
Organiser Database Exhibitions 061-456 8835

Prices dates and venues of shows can vary and you are therefore strongly advised to check with the show organiser before attending *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

Amiga chip suit comes to trial

THE dispute between Atari and Commodore over the Amiga's custom chips is due to come to trial in the American courts at the beginning of November.

Atari originally paid Amiga, before it was bought by Commodore, to acquire the rights to three custom chips Amiga was developing to be used in forthcoming Atari machines.

Amiga developed the chips, now known as Agnes, Denise and Paula, and built into the Amiga A1000 machine, but apparently then repaid Atari its money. Amiga was subsequently bought by Commodore which went on to develop and sell Amiga's A1000 with the three custom chips in it.

Atari, by now under Jack Tramiel's leadership, filed a lawsuit claiming that the contract was not properly terminated.

Speaking for Atari in Sunnyvale, California, Claud Mahum said, "I am really not willing to comment at all on the case. We have a very good case, but our attorneys have advised us not to comment."

Jay Miner, head of the Amiga team, told *Popular Computing Weekly*, "My opinion is that it's just harassment by Atari. I'm sure Atari will lose, so I don't know if there will be an appeal or not, but Atari seems to think the chips belong to them somehow."

Jack Tramiel, head of Atari



The Darlings: Jim, David and Richard

The Darlings set up independent label

THIS week sees the announcement of a new budget software label which aims to release 50 titles by Christmas and capture a 10% overall market share of this time next year.

Named Code Masters, the label has a strong budget background, headed by Jim Daling, once MD of AI Products, the company that was responsible for the writing of all Mastertronic titles until the end of last year.

Spearheading the programming team are his two sons, Richard and David Darling. Their most recent releases have included *The Last V8*, which launched Mastertronic's MAD range, and *Master of Magic*, in careers that have sold well over a million games to date.

All Codemasters product is planned to retail at £1.99, right in Mastertronic's established territory, although Jim Darling anticipates that his sales would largely stem from an overall increase in budget sales (increasing from the present 40% to around 60%) rather than cutting into the existing budget market, even though the games will be sold through similar channels.

"We're not having a go at Mastertronic," he emphasised. "We'll be producing good quality product by programmers with a reputation."

More details on Code Masters products in Software Hotlines.

Anco goes for US licences

ANCO has signed a licensing deal with US software company Artworx for the 16-bit rights to its current catalogue. Previous Artworx product for 8-bit machines has been released in the UK by US Gold.

Artworx has produced *Strip Poker*, *Bridge 4.0* and *Golf* which Anco will be releasing for the Atari ST and IBM PCs and compatibles this autumn.

This marks a diversification for Anco away from games for the lower costing machines.

"We are leaving the popular home computing market and moving towards the IBM, STs, and Amiga's – but very slowly," said Anco's Anil Gupta. "I think we will definitely see a big upsurge here in 1987, and of course they are marvellous machines."

Anco's prices for Artworx product will be around £20, and the first Artworx titles are being released this month.

New Commodore micro previews at Comdex?

IT now looks as though Commodore US will preview the next addition to the Amiga family at Comdex, the prestigious American show which begins on November 9.

The machine is a more sophisticated version of the Amiga, and is currently known as the Ranger. It is based on the Motorola 68020 chip, a development from the 68000 used in the current Amiga. The new machine also incorporates a 20Mb hard disc as standard.

It is expected that this new machine will appear at around the same price as the Amiga is now, around $1200, with a possible price cut on the current model.

Clive Smith of Commodore US declined to comment on the possibility of the new machine appearing in November. "I'm not even sure Commodore will be at Comdex. We don't comment on unannounced machines. I have read the rumours about it as well but I cannot say anything. The Amiga was always intended to be a family machine, so there will be more appearing in the future."

It is not at all clear whether these machines will be sold in the UK. Chris Kaday, Commodore's UK General Manager said, "As far as we're concerned there will be no new Amigas this side of Christmas. After that I don't know.

"In the UK, we'll take anything that they make in the States, but I don't know of anything at the moment."

There have been no further developments regarding the possible launch of a cut down Amiga in Britain at a price to rival Atari's STs. Chris Kaday was remaining tight-lipped on the subject.

Amstrad joins satellite TV consortium

AMSTRAD is diversifying into the satellite TV field with the announcement that the consumer electronics company has joined a consortium which includes Virgin, Anglia and Granada TV and Financial Times publisher Pearson to set up a satellite TV network.

Amstrad chairman Alan Sugar has said he intends to produce a £99 satellite TV dish by the 1990s.

News Desk

Gauntlet vs Dauntless dispute

A DISPUTE over the rights to US Gold s forthcoming *Gauntlet*, and *Dauntless* from Electric Dreams has been resolved amicably', according to Electric Dreams managing director, Rod Cousens

The noticeable similarity between the two titles is because they are licensed from related titles

I licensed the home computer rights to *Dandy* an arcade game originally from Atari explained Rod Cousens

US Gold has the rights to *Gauntlet* the arcade game which is a derivative of the original *Dandy*

We have come to an arrangement which allows the publication of both games and ours will now be called *Dandy* Cousens went on He appears unworried by the competition between the two titles US Gold has the arcade endorsement, but we have put a considerable amount of programming time into ours

Dandy was *Dauntless* undaunted by *Gauntlet*

Konami to go it alone

KONAMI, the Japanese arcade game publisher, whose games have previously been licensed to Imagine Software in the UK will shortly be launching games under its own name

Arcade originals *Jail Break* *Nemesis, Super Basketball* and *Iron Horse* will be available for C64 Spectrum, Amstrad and MSX in the next few months After that Konami plans to convert the coin-op title *Salamander* for these machines for early 1987

DR books

DIGITAL Research is to make its first foray into the book publishing market, with titles on using its DOS Plus and Gem operating system products, both of which are bundled with the Amstrad PC 1512

The books are being released to coincide with the appearance of the Amstrad PCs in the shops and therefore should be available now

The three books in the series are *Using DOS Plus on the Amstrad PC* (£9 95 paperback, £12 95 hardback), *Using Gem on the Amstrad PC*, and *Business Presentation Graphics on the Amstrad PC* (both £12 95 paperback, £15 95 hardback) All titles have been published in conjuction with Glentop Publishers

Further details from Digital Research on 0635 35304

USG hiccups

IN our show report last week, there were some hiccups over our descriptions of US Gold s forthcoming titles

Gauntlet will also be appearing for the MSX but an Amiga version has not yet been finalised Epyx did not produce *Pole Position* but it has produced *Super Cycle*, and *Acrojet* is more of an aerobatic decathlon simulation than a simple flight simulator

Apologies and all that

Software Hotlines

Richard and David Darling have started a new budget label called **Code Masters** in conjunction with their father, Jim (see news story)

The label will cover the Spectrum, Commodore 64 & 16 Amstrad CPCs Atari 8 Bit and Electron machines and possibly the Atari ST

The eagle-eyed may have noticed them recruiting talent at the *PCW* show under the banner of Digital Computers Sources indicate they were "inunbated with programs and with big money at stake and potential sales of 100,000 plus for a successful budget title it is rumoured that several well known names have been making enquiries

The first 12 titles will be launched at the end of September four on Spectrum four on C64, two on Amstrad CPC and two on C16

These include two follow-ups – *BMX Simulator* (sequel to *BMX Racers* – see below) and *The Last V8 II* plus *Terra cognita* written by Steven Curtis author of Mastertronic s *Nonterraqueous* More details as they re beamed through

Anyway I was sitting in the closet the landlord says is my office, waiting for the phone to ring Which was something like a drunk waiting for a rabbi to turn water into wine since the company had cut us off last fall

Then this guy sticks his head round the door Short guy round five seven, 150 pounds, puffy face Double glazing salesman? Or maybe in PR ' You in? he says In? With this suit I hadn t been in for twenty years

' Siddown, I nodded to a chair, and narrowed my eyes He looked scared

'I got deez picturse – a nu game from Microsphere 'bout private investigation in the 1940s stateside Called *Contact Sam Cruise*

' Geddoutta here ya bum, I drawled 'My name s Marlow and the *Popular* office is next door '

John Cook

Universal discs for the 8256

SILICON Systems has launched the Uniface a universal disc interface for the Amstrad 8256 It allows any BBC or Shugart standard drive to be connected to the machine and costs £59 95

The company is also now selling a silicon disc and print spooler system for the 6128, price £19 99 and the Amdrive 3 inch add-on drive for the CPC series at £89 95 A 16K sideways Ram allowing users to shadow Rom code to and from disc is also to be launched in October at £39 95

Details from Silicon Systems 43 Elsnore Road Old Trafford Manchester M16 0WG (Tel 061 848 8959/ 9233)

Secret's out

ST BRIDE S School is set to convert *The Secret of St Bride's* to both the Amstrad CPCs and PCW machines to be published by Audiogenic

Its latest title is *Bugsy*, which will be published by CRL at £7 95 on most machine formats

Improve your connections

TYPRO is offering a customisation service for people with connection problems The company will alter its standard products to suit particular needs, even for single orders, and also runs a hotline service to advise on connection difficulties Prices for interfaces and switches start at £59 95

Details from Typro, 30 Campkin Road Cambridge CB4 2NG Tel 0223 322394

Cheap PC networking

MICROMODS DeskLAN is a cheap PC network A two-machine network costs £399 while six machines can be linked for £1 599 It will operate with any PCDOS or MSDOS based system, and according to MicroMods is particularly suited to cheaper PCs such as the Amstrads

Details from MicroMods 8 Regent Street Long Eaton Nottingham NG10 1JX (Tel 0602 724264)

PCW – more games announced

MORE games for the Amstrad PCW machines are on their way, this time courtesy of the ironically named CPC Minehead

CPC a business software publisher is setting up a label PCW Soft to produce an initial range of four titles

Merchant is a trading game for two to six players *Fantasy Quest* is a D & D type game *Mountain Leader* has you organising a climbing expedition, and *Speculators* gives two to six players the chance to become millionaires (within the confines of the program)

All will cost £9 95 each or £35 for all four brought as a set

CPC can be contacted for details at 4 The Parade Minehead Somerset TA24 5UF Tel 0643 4851

PCW – more games ▶

Still in the running

Two more science fiction movie stills to identify this week in *Popular's* blockbuster competition

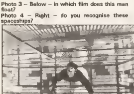
Remember, the prizes are really worth going for – five Spectrum Plus 2s for the five main winners, then ten Star Micronix STX 80 printers for the next best, and 50 Mastertronic Magnum joysticks for the runners-up

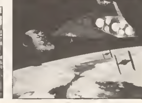
But don t send us anything yet – there are four more stills yet to come, plus all the details on how to enter

If these pictures have got you stumped, don t despair We may be dropping the odd clue in the final week Meanwhile, keep this page safe

Photo 3 – Below – in which film does this man float?

Photo 4 – Right – do you recognise these spaceships?





Letters

Star Letter

Going Crackers II

After reading your review of The Cracker II in *Popular Computing Weekly*, September 4, I remembered I had seen the program reviewed before in the magazine.

I also had a feeling that the first review was very similar to the one I had just read, and after rummaging through my back issues, I found the first Cracker II review in the *Popular* Supplement, July 24.

My suspicions were proved correct. Both times the reviewer was Tony Kendle and the reviews were, with a few very minor differences, identical.

Reviewing software twice, especially when it costs about £50, seems an excellent idea, giving prospective purchasers two opinions before parting with their money.

However, as you said in your reply to David Egdoll (Letters, September 4) "reviews are essentially subjective", there seems little point in getting the same person to review a program twice.

Stephen Vysny
Fife

Whoops! Actually, we're really trying to emulate The Guardian, which on September 11 managed to print the same letter twice on the one page.

Dare to help!

HELP! HELP! HELP! HELP! HELP! HELP! HELP! HELP! HELP!

Owing to a little misunderstanding between ourselves and our duplicators, there is a discrepancy between the Amstrad disc loading instructions on the *Dan Dare* Inlay and disc label and what you must type into the computer!

Instead of *Run"Disc*, *Dan Dare* requires | CPM (the | (or bar) is achieved by pressing *Shift* and @).

Patricia Mitchell
Virgin Games
Portobello Road
London

Printer experiments

Thank you for publishing my last letter to your magazine.

Recently I was experimenting with my C64 and printer. The enclosed subroutine is the result of my efforts. The subroutine allows the user to print in correspondence quality text using an ordinary dot matrix printer such as an MPS 801 and MPS 803, both of which have been available for prices as low as 60 pounds in recent weeks.

The routine works by printing the string PR$ twice. Firstly, the line spacing is set to the smallest increment possible, then the string is printed once. The line increment is then set to the default setting by printing chr$(36) in line 1030 of the subroutine. PR$ is then printed again giving the appearance of correspondence quality print. Used in conjunction with my Star SG-10C printer it provides a useful supplement to both draft and NLQ type faces, as it is 50% faster than NLQ printing, yet much nicer looking than the draft mode.

This routine could be adapted to work with any computer in conjunction with any printer which has variable line spacing that is software controlled.

```
900 REM CORRESPONDENCE PRINT
BY A J B
1000 OPEN1 4 7 OPEN2 4 6
1010 PRINT#2 CHR$(1)
1020 PRINT#1 PR$
1030 PRINT#2 CHR$(36)
1040 PRINT#1 PR$
1050 CLOSE1 CLOSE2
READY
```

Andrew Bowman
Drymen
Glasgow

Total agreement

How I agree with your reader Mr Dabner about the Oric Atmos. I too searched everywhere for the Atmos and finally found them on sale in Curry's at about £60 each. I tried out five of them, but they all had bugs and I reluctantly gave the idea up. Yet while I had the computer I was impressed by the keyboard which is still far better than any other on the market. The commands were good (when they worked) and the size very acceptable.

What I still dream of is a Little Oric Atmos with a disc drive and a small printer.

– continued page 10 –

Puzzle

Puzzle No 225

"How much was that bike?" enquired Ben as he admired his pal's shining new bicycle.

"Well," replied Jamie, "Take the price of the bike in pounds and pence, and reverse the order of the two digits in the pounds value. Now exchange the pounds value for the pence and the pence value for the pounds.

"The amount that you now have," continued Jamie, "is just £5 *less* than twice the price of the bike."

Ben was duly mystified, but eventually managed to work it out.

How much was Jamie's new bike?

Solution to Puzzle No 220

Answer

The trick will work equally well with packs having 32, 33, 36, 37, 48 or 49 cards (as well as with a full pack of 52 cards).

Solution

The program carries out the trick in exactly the same way as described. The cards in the pack are held in the string *Pack$*, each card's order being denoted by characters with Ascii values in the range 32 upwards (depending on the size of the pack).

These cards are dealt into two piles as represented by strings *C$* and *D$* (remember the order of the cards is reversed at each deal). The dealer's pack *(D$)* is then re-dealt until a single card remains.

The original position of this card is given by the value *Asc(D$) 31*.

By testing packs of different sizes, those in which the final card started originally at position 22 are found.

```
10 PACK$=""
20 M=22
30 FOR N=1 TO M
40 PACK$=PACK$+CHR$(N+31)
50 NEXT N
60 C$="":D$=""
70 L=LEN(PACK$)
80 FOR N=1 TO L
90 Z$=MID$(PACK$,N,1)
100 IF N/2=INT(N/2)THEN C$=Z$+C$ ELSE D$=Z$+D$
110 NEXT N
120 IF LEN(D$)=1 THEN 150
130 PACK$=D$
140 GOTO 60
150 IF ASC(D$)-31=22 THEN PRINT "Pack size ";M;
has card at position ";ASC(D$)-31
160 PACK$="":M=M+1
170 IF M>52 THEN STOP
180 GOTO 30
```

Winner of Puzzle No 220

The winner this week is Henry Lovett Turner of Barnes, London who will be receiving £10. The closing date for puzzle 225 is October 7.

– continued from page 8 –

Surely not too much to ask in these days Can I find one? No yet I am still convinced it was one of the best micros made

There is a real market for people like me who don't want to play games on computers and don t want to pay the earth for a small word processor

Brian W Haines
London NW1

A nice language, that

I agree that Basic should be structured but it needs a bit of help What really needs improving is the editor provided for Basic in most micros It is all very well to use an editor like Metacomco s ED but a dedicated Basic editor which enables editing by procedure or function would be very useful Also things like cut and paste or copy would be very good

With respect to recent advances in hardware, and the possibility of Basic coping with things like Manic Miner type games, this brings up the question of hardware support The Sinclair QL's Basic is easier to add than most but it is not fast For Basic to cope with Manic Miner, a few extra commands for sprite handling and some faster processors (transporters are fast but I don t think we ll have a DEFine PROCedure in a home computer machine code for a while yet) and decent support chips (e g Amiga)

Basic is a nice language but it can be a nightmare

Tund

Still going for the one box concept I see'

A hard day's Knight

The *Popular* vs *Colossus* chess tournament rolls on, with the second moves by both sides now complete

In Game One (see table of moves below if you haven t been following our progress), most *Popular* entrants plumped for moving the knight out from b8 to c6 This has been duly entered into the game and *Colossus* has replied with **3** B f1-c6

In Game 2, *Popular* is playing white, and **2** N g1-f3 proved the most popular move *Colossus* has countered that one with **2** N b8 c6

Obviously we re still at opening book stages at the moment Some people are suggesting some fairly radical moves, but it s the more conventional ones that are gaining more votes at the moment Come the middle game, this will doubtless change, and the more adventurous and imaginative suggestions will hold sway

The game so far

Game One

1	P e2-e4	P e7-e5
2	N g1-f3	N b6-c6
3	B f1-c6	?

Game Two

1	P e2-e4	P c7-c5
2	N g1-f3	N b8-c6
3	?	

Popular readers play Black in Game One and White in Game Two Let us have your suggestions for *Popular s* next moves in place of ? in each case

Suggested moves should be sent to *Popular* Chess, Unit 11 South Block The Maltings, Sawbridgeworth Herts CM21 9PG, by September 24 *Colossus* will respond to the move suggested by most entrants

Prizes

A British Museum reproduction Arran chess set will be awarded to the reader who makes the greatest number of accepted moves by the end of the game

Music to the QL user's ears

Leon Heller discovers new musical potential in the QL with ABC Elektronic's device

Although the QL has a sound capability, which may be used from Superbasic via the *Beep* command it is very rudimentary and quite difficult to use effectively for generating music and games sound effects Sinclair itself seemed to be aware of the problems as it stated in the User Guide that "The Superbasic *Beep* command is best used experimentally rather than syntactically" !

ABC Elektronic is a German company which has been involved with the QL for over two years It was the first company to sell a mouse for the QL for use with Giga Basic and the Qsound/Qprint board is their second piece of hardware

The Qsound/Qprint consists of a small board which plugs into the QL expansion port at the left of the machine It uses the ubiquitous General Instrument AY-3-8910 sound processor, which is also used on the Amstrad CPC464 and the Atari ST machines as well as MSX computers The chip generates square waveforms which don't sound all that pleasant to a musical ear but since one has amplitude and envelope control of the three channels available and various types of white noise can be mixed with the output a wide range of sound effects and quite passable music may be produced

To the programmer, the sound chip looks like 13 registers, and is programmed by loading various values into these registers Also on the board is an Eprom containing the software drivers for the sound chip The AY 3-8910 also contains a parallel I/O port which is not utilised on most other systems that use the chip but is used to provide a Centronics parallel printer port on the Qsound/Qprint Software drivers are also provided for this port, in the on-board Eprom A standard 3 5mm jack socket is fitted so that the sound generated may be passed through an amplifier/loudspeaker system (provided by the user)

The code in the on board Eprom adds an impressive number of keywords to Superbasic for controlling all the functions of the sound chip including operation of the parallel printer port Starting with the printer port, a new device named *Par* is available With a Centronics compatible printer connected to the interface, typing

```
OPEN#3 PAR
PRINT#3, "FRED"
CLOSE#3
```

should output the string *Fred* to the printer Part of the QL Ram may be allocated as buffer for a print spooler, by using say,

```
OPEN#3 PAR_16
```

to allocate 16 blocks of 512 bytes of memory for a spooler Large files may now be sent to the printer, and normal operation of the QL continued whilst the file is printed out as a 'background' task Some other very useful options are provided

> *"ABC has made a very nice job of the software, making it easy for even an inexperienced user to get some useful effects"*

Data to be sent to the sound chip is queued (a facility provided by QDOS) and output under interrupt control so the QL can get on with something else whilst a whole string of commands is sent to the sound generator

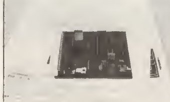
30 new Superbasic keywords are provided for control of the sound facilities and the parallel port I can only mention a few of the more interesting ones *Explode* generates the sound of an explosion *Hold* stops all interrupt sound lists, *List_Ay* sends values to the registers of the sound chip, *Peek_Ay* reads the sound chip register contents *Play* puts a string of notes into one of the sound channel, *Release* causes sound lists to be played

The AY-3-8910 is quite a difficult chip to program (I put one on my old Tandy some years ago, and found it quite tricky to make it do what I wanted), but ABC has made a very nice job of the software, making it easy for even an inexperienced user to get some useful effects provided he or she has a reasonable command of Superbasic

A small A5 booklet is provided comprising 22 pages The first section (two pages) is devoted to the parallel printer interface and the remainder deals with the sound facilities provided All the additional keywords provided are described briefly The assembler programmer will find a very detailed description of how to access the sound chip functions, documented in a similar manner to the *Sinclair Technical Manual* A few examples should have been provided but the manual is otherwise quite good

The price of £69 95 (plus Vat) seems a little high but if you want to produce excellent sound effects for games, or reasonable quality music on your QL, this is the only way to do it The onboard software seems excellent and the parallel printer port and spooler functions are a very useful bonus

Product: QSound/QPrint board **Micro:** Sinclair QL **Price:** £69 95 + VAT **Suppliers:** Digital Precision, 222 The Avenue, London E4 9SE. 01-527 5493 Leon Heller, 66 Flanders Mansions, Flanders Road, London W4 1NF. 01-994 7976



Lernloco – a bit too simplistic

Lernloco is a tutorial package on disc on the intricacies of *Locoscript*. It aims to take the user through all *Locoscript's* features and the short cuts which certain keys can provide.

As such, it is not laid out in the way that the manual takes you through. Where the Amstrad manual starts with writing a letter, tidying it up, printing it out (with a lot of going off at tangents on the way) *Lernloco* is rather more concerned with the codes (italic, bold text, etc) and specific PCW keypresses for finding your way around in the early stages.

As such, it is extremely thorough, dealing with details such as line pitch variation, exchanging and finding and all the *Alt*, *Shift* and *Doc/Page* combinations almost within the first half hour you'll spend with the package.

This leads me to suspect it is meant not so much for the complete *Locoscript* beginner, but for someone who has mastered simple letter writing, and has given up on the manual. Even so, all the basic information about making back-up discs, and proceeding from the disc management screen into documents is in there as well.

Later sections describe the mysteries of headers, footers, pagination (including the legendary page numbering conundrum), making labels and saving blocks and phrases. It's a pretty exhaustive guide.

Like all these text tutorials on disc, one wonders whether it would have been just as effective as a booklet – or book in this case. *Lernloco* asks you to print out most of the tutorials and refer to them while using the PCW in its various test sections. It also invites you to make on screen alterations to the *Lernloco* text itself, which goes some way to justify putting it all on disc.

My main criticism has nothing to do with *Lernloco's* content but the style in which it's written, and to some extent the presentation.

Considering that *Lernloco* comprises about 150K of text to read, there is only so much of this 'Let's Learn *Locoscript* with the Mr Men' style that one can take. Has Minerva done some market research which suggests that the majority of 8256/8512 buyers are under ten, I wonder?

The presentation on screen uses as many sub-layouts, varying pitch widths, and as much emboldening, underlining, reverse video and italicisation as it can all within each page. This makes it quite difficult to read on screen at times, even if it does provide a practical example of the many presentation options available. The printed out versions are easier on the eye, if not particularly cohesive in appearance, but I still feel that someone has gone somewhat over the top.

However, for anyone who is wondering just exactly what all those keys on the right hand side of the 8256 do, or who would love to get heavily into sub-layouts and varied editing, *Lernloco* provides a clear practical guide.

Christina Erskine

Program *Lernloco* **Micro** PCW 8256/8512 **Price** £29.95 **Supplier** Minerva Systems, 69 Sidwell Street, Exeter, Devon, EX4 6PH

Efficiency made easy with Toolkit

ST Toolkit offers a small number of utility functions to help you use your computer more efficiently. These functions being Printer Spooler, Ram Disk, Diskcopier and Disk Utilities.

The Printer Spooler is one of the most useful utilites as it enables you to carry on working when your machine is churning out a large document and would otherwise be rendered unusable until the document had nearly all been printed.

After running the program you are asked for the size of spooler that you require, having to choose from 16K, 32K, 48K or 64K. Once picked it's simply a matter of clicking on the Install box onscreen.

Next in the value stakes is the Ram disc program. This, of course, reserves part of the memory and uses it as a psuedo disc drive to save and load data faster and more reliably than the real thing (although all data must be physically saved before the machine is turned off).

Once installed a 520ST has a Ram disc of 284K and a 1040ST, one of 749K. An icon labelled Drive D now appears on the desk top and is available for use.

Of less use is the Diskcopy program which offers a copy or format and copy option. If the disc you're copying is unprotected then you may as well do it from the desk top as it's much simpler and quicker (in practise) than this program. As far as making back-up copies of protected discs goes – the program failed to copy the two discs it was tried on.

Disk Utilities offers very little that is new, apart from the ability to rename discs after they've been formatted. Personally I couldn't discern anything here that isn't possible from the desk top.

Duncan Evans

Program *ST Toolkit* **Micro** Atari ST **Price** £29.95 **Supplier** Robtek Ltd, Unit 4, Isleworth Complex, St Johns Road, Isleworth, Middlesex

```
A:TUITION2/TUITION.006   Editing text.                 Printer idle.  Using A:
Layout     -PiPS   -LS1   -LPS                          Page    5  line  1 of 57
f1=Show  f2=Layout  f3=Emphasis  f4=Style  f5=Lines  f6=Pages  f7=Modes  f8=Blocks  EXIT

Tuition 006
(Centre)        (+Pitch17D)(+ReV)Varied Editing(-ReV)(+Pitch12)

Please beware Jenny I am showing CODES in TUITION.006 which may cause some
confusion when you are reading the text !  (+UL)Don't forget the EXCH facility.(-UL)

Pages 7 to 10 are devoted to BASE and NEW (sub) LayouTs but for the moment
please consider the information on display in the (+ReV)the green highlighted area
at the top of the screen(-ReV)

PiPS shows the Base LayouT is set in Proportional Spacing.  LS1 is one space
between lines. LPS is a pitch of 6 lines to the inch. Although these 3 types
of command are set in the Base LayouT they may be introduced by (+Bold)direct COMMAND
whilst editing text.

        +LS1=       LineSpace 1 or Single Line Spacing
        +LS2=       LineSpace 2 or Double Line Spacing

(+ReV)I shall change the LineSpace with the command +LS1½ now (+LSpace1½)(-ReV)
This paragraph is now on 1½ LINE SPACING and at the end of it I have given the
COMMAND -LS which returns the SPACING to that which is in the BASE LAYOUT.  (+ReV)
The LS options are 0, ½, 1, 1½, 2, 2½, 3(-ReV)  LS can be introduced at any stage
but will not come into effect until the following line of text.(-LSpace)

The effect of these changes are not evident on the screen but will be seen
when printed.  The command +LS3 followed by ENTER creates triple line spacing
(+ReV)Move the Cursor slowly down the page Jenny and watch the effect on the LINE
NUMBER displayed top right of the screen.  Try it again starting under
```

It's the sound of freedom

John Lettice reviews games for PCs from MicroProse and Activision

When you hear a McDonnell Douglas F15 screaming overhead do you think to yourself that's the sound of freedom? If you found yourself at the controls of one, would you pop over to Tripoli and turn Colonel Gaddafi's tent into a large crater?

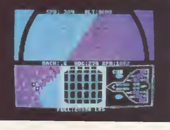
If your answer to either of these questions is no, clearly you've got The Wrong Stuff, and as a potential agent of International Communism shouldn't be allowed near MicroProse's *F15 Strike Eagle*. Pity really, because it's one of the classier programs we're likely to see running on the Amstrad PC this autumn.

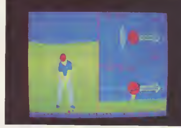
One of the nicer things about Amstrad's latest launch is that it should allow people in the UK to get their hands on some of the best of US software at reasonable prices. UK software houses are scrambling to sign up licensing deals for PC programs, and even now there are a few programs around that will help you get the flavour of what's in store. Back to *Strike Eagle*, which is a highly polished combat simulation, running to two kinds of air to air missile, electronic counter measures and such frills as drop tanks and a head up display.

There are seven scenarios of progressive difficulty in all, starting with the notorious Libyan mission (written before the more recent real thing) and then Egypt, Syria and Vietnam to Iran. The structure of each is the same – you begin flying towards the target, and on the way cope with missiles from the air and the ground plus enemy aircraft.

The display is convincing, and there are enough compromises with the arcade to make play fast and addictive. MicroProse's political outlook may be, er, interesting, but no way is the company getting this one back off me.

Gamestar's *Championship Golf*, being released here by Activision, suffers initially if you compare it to *Leaderboard*, as the IBM's display can't rival the ST's (or, arguably, the Commodore 64's). But you'll find it's trickier and possibly more accurate than *Leaderboard*.





The version reviewed here is *Pebble Beach*, and try as I may, I still haven't managed to get round in anything better than 60 over par. The initial play screen is split between a plan view of the hole and a perspective view from your position. You swivel yourself round with the function keys to get the best shot angle, then move on to club selection.

Once you've done this you can adjust your stance, then control is by keyboard, which governs whether you use wrist action, body action or both.

I'd like to see a mouse facility for the game, but apart from that it's great stuff, and hours of entertainment.

Back to MicroProse, which with *Hellcat Ace* seems intent on proving that not all its products are terrific. The script is war in the Pacific, the screen display is simple, and neither your aircraft or the opposition's behave as the real thing should. For example, if you turn towards an opposing fighter it will often sit at the same point on your screen while you are turning before appearing suddenly in your rear-view mirror. Too suddenly.

There's a caveat that relates to all of the above if you're planning to buy an Amstrad PC. For a start, if you have a monochrome monitor none of the games will run. Secondly, the PC's display is actually quite limited in terms of the combinations of colours you can show at any one time, and the use of mice on the machine is quite a recent phenomenon. The Amstrad PC has a more sophisticated display in terms of the colours it can show, and has a mouse as standard, but most of the existing US product won't take account of this.

Now what the importers should do is include a couple of patches that will allow mice to be used, and one that will allow programs to take advantage of the Amstrad's extra colour.

A trying Uridium clone in Psycastria

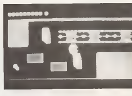
Uridium clones seem to be coming out almost by the dozen lately, so it was only a matter of time before there appeared one for the BBC and Electron here it is, *Psycastria* from Audiogenic

Written in Mode 1 on a reduced screen (saving a bit of memory) the action is smooth horizontal scrolling over an obstacle-strewn futuristic technoscape The four colour display is quite effective spoilt only by the ship changing colour when moving over some of the backgrounds Sloppy

Controls are simple left/right, up/down, fire and the choice of joystick or keyboard is there – although we all recommend keyboard here, rather than the flabby response given by the analogue joystick

Although the game draws heavily upon *Uridium* for inspiration, the actual task in hand is different and considerably more difficult As you fly along you must destroy 10 energy pods on each level – this is quite a task even assuming you can identify them (it took a call to Audiogenic to sort this out) placed as they are in niches between structures that need the co-ordination of a mega-being from the 9th Dimension to swoop into fire, and swoop out again without creaming your spacecraft up against a wall That is, *Psycastria* is difficult'

This choreography of mayhem all carried on with above average zzppangs and ppows (which can be turned off if necessary) and a host of alien nasties which only travel in straight lines, to begin with



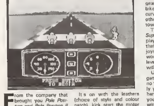
Being the only program of this type presently available on the BBC it is certainly worth getting hold of if you are an arcade fan – but I can t help thinking that with a little more effort, this would have been an excellent game, rather than simply a competent one

Popular Appeal ♦ ♦ ♦

John Cook

Program *Psycastria* **Micro** BBC B/Electron **Price** £7 95 (tape) £11 95 (disc) **Supplier** Audiogenic, PO Box 88, Reading, Berkshire RG7 4AA

Racing along with Super Cycle...



From the company that brought you *Pole Position* and *Pole Position II* now comes another classic racing game – *Super Cycle*

It s on with the leathers (choice of style and colour match), kick start the motor and you re off Slot it into first push the revs into the red then it s through the gears (three only), leaning the bike left and right through the curves as the track (and many other riders) come hurtling towards you

There s no doubt about it, *Super Cycle* is fun Immensely playable, it s the sort of game that you can just pick up the joystick and enjoy from the word go, yet on the harder levels is fairly challenging Not without it s faults, however

Unlike that cracker of a game *Pole Position II*, there is no two-player option – strictly you against the computer here, which is a great pity If you complete the course within the allotted time limit, a new one automatically loads from tape which slows down the action considerably No high score table either

Even so, *Super Cycle* is slick loud and fast – but if you already have *Speed King* for instance – it s a fact that although this particular Epyx epic has considerably more polish the game play is essentially pretty similar

The decision as to whether you want to pay for a graphically enhanced version is up to you

Populer Appeal ♦ ♦ ♦ ♦

John Cook

Program *Super Cycle* **Micro** Commodore 64 **Price** £8 95 **Supplier** US Gold, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

...and gliding with the Rider

All the thrils of hang-gliding with none of the broken legs are offered by *Glider Rider* Couple this with an opportunity to indulge in a little sabotage and destruction, some great graphics and a superb soundtrack – on the Spectrum! – and you get the best game Quicksilva has released for ages

The Ultimate-style, single-colour, 3D perspective graphics illustrate a heavily fortified island complex, along around which you the intrepid commando must travel by motorbike Finding a slope to launch from allows you to take to the air in a dinky hang-glider, dropping bombs on the enemy

Pop-up status windows keep you informed of your progress, while on the 128K version an astonishing soundtrack featuring sampled sounds as well as chip-generated music keeps the action moving

Popular Appeal ♦ ♦ ♦ ♦

Chris Jenkins

Program *Glider Rider* **Micro** Spectrum **Price** £8 95 **Supplier** Quicksilva, Argus Press Software Victory House, Leicester Place, London WC2

The spectrum of racing

TT Racer is that long awaited title from Digital Integration – more than 18 months in the writing – so I was hoping for something extra special. Was this finally going to be a *Revs* for the Spectrum? Reluctantly, I have to say a firm no.

There is no doubt that DI has taken meticulous care over writing this one – it has more options than you'll find traded on a busy day at the Stock Exchange, and the unique feature of being able to network up to seven Spectrums together (via Interface 1) to race against each other. But did it ever feel like riding a motorbike, let alone racing a 500cc machine? Was I ever caught leaning into corners, joysticks in sweating hand, eyes glued on the monitor? Did I ever feel I was actually out there on the tarmac of beloved Silverstone? Not once.

"Unbelievably realistic" is the quote used on the inlay from Paul Lewis, fully paid-up member of the Suzuki team. I simply can't agree. If a complete novice doesn't crash once on his first time out with throttle wide open all the way, there is something very wrong, no matter how *technically* realistic this simulation is. But on the other hand, if it's trying to be a pure race game, it's just not good enough in terms of graphics and illusion of speed.

Still, it is a fact that there are relatively few race games for the Spectrum, and *TT Racer* is far from being a dodo. But it's not up to DI's usual high standard of simulation and it won't impress your Commodore owning friends that have just come off that adrenalin high of *Super Cycle*.

Popular Appeal ♦ ♦ ♦

John Cook

Program *TT Racer* **Micro** Spectrum **Price** £9.95 **Supplier** Digital Integration, Watchmoor Trade Centre, Watchmoor Road, Camberley, Surrey GU15 3AJ

Bug-Byte's leap in the dark

Okay, so budget label programs don't usually score on originality. Price and entertainment value are the main considerations here so it's unfortunate that *Leaper* from Bug-Byte fails on both of these counts as well.

The basic premise of the game is that you must guide your splodge called Leaper to the top of the screen by jumping through holes in platforms that glide above his head. Yawn.

To liven up the proceedings, albeit infinitesimally, there are six varieties of unfriendly splodges, all out to send you back to the beginning of the game (and you can't get more unfriendly than that). Bigger yawn.

The graphics are lousy (the black background not helping matters) and the animation is just as unimpressive. For nigh on three pounds this game is still overpriced and can basically be considered as a blank cassette if purchased. Eyes droop, yawns again.

There you have it, all the intellectual challenge of death and about as exciting. Zzzzzzz.

Popular Appeal ♦

Duncan Evans

Program *Leaper* **Micro** Atari 8-bit range **Price** £2.99 **Supplier** Bug-Byte, Liberty House, 222 Regent Street, London W1R 7DB.

The return of the space turkey

Back in the mists of time (circa '83) programs like *Galaxibirds* could command a price of eight quid or so. Nowadays they are fated to spend their short lives on a budget label retailing for the bank breaking sum of £1.99.

Yes, it's one of those space games involving move, shoot, move and shoot again. This time the foe are not aliens of a green persuasion but are turkeys with a lemming like desire to end up at Kentucky's.

The graphics are pretty standard for this type of game, the turkeys being smoothly animated. After each wave there's a different breed of turkey.

The title page has a nice line in caustic comment, sending up the game itself, amongst other things.

If you want to kill, kill and kill again, you can't go far wrong with *Galaxibirds*.

Popular Appeal ♦ ♦ ♦

Duncan Evans

Program *Galaxibirds* **Micro** C64 **Price** £1.99 **Supplier** Firebird, 74–76 New Oxford Street, London WC1

A bunch of turkeys from Firebird

Evesham Micros

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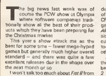
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The action at Olympia



Tony Kendle with all that's new in arcade games from the Personal Computer World show last week

The big news last week was of course the PCW show at Olympia where software companies traditionally show all the best of their products which they have been preparing for the Christmas market

This year's show struck me as the best for some time – fewer mega-hyped games but generally much higher overall standard – and there was quite a few excellent releases due in the shops over the next month or so

I won't talk too much about *Fist II* from Melbourne House or the superb *Faster Than Light* games from Gargoyle such as the *Xevious* clone *Light Force* as they were covered in *Popular* in quite a lot of depth

Anolasoft had their usual range of interesting new products including a follow up to *Floyd the Droid*, but it all was eclipsed by the Amiga version of *Marble Madness* which was everything you dreamt it would be

On the whole though the ST put on a stronger show – a wide range of graphically superb, if unoriginal games were on display including *Karate* and lots of shoot-ups from *Paradox*, Rainbird had some impressive demos of its forthcoming *Starglider* which looked like a mega version of *Dark Star*

Possibly best of all was the ST *Mercenary* which looked like it would live up to all expectations Excellent news is that Amstrad and Spectrum versions are well underway

Making its appearance at long last was Ocean's *Street Hawk* and it looked worth the wait – a top down view of a 3D car and motorcycle chase

Another excellent car game from them is *Nightmare Rally* and *Parallax* is a *Uridium* like space game

Also a bit like *Uridium* is Martech's *WAR* and of course it was difficult to miss its new judo game *Uchi Mata* with Brian Jacks on hand throwing people around the stand

The best *Uridium* style game though was *Uridium* itself – out on the Spectrum from Hewson and looking superb Another interesting release is *Firelord* from Steve Crow of *Starquake* fame which has his own *Ultimate*-plus graphic style

Hewson's Commodore follow up to *Uridium* was there in the form of *Alleykat*

Electric Dreams had a very strong display with an excellent official version of *Tempest* running on the Amstrad CPC's Promised highlights that I didn't get to see were *Dauntless*, the game of *Aliens* and conversions of the Atari classic *Star Raiders* – possibly the greatest cult game of all time I can't guess why it took so long to think of putting it on other machines

As well as the official US Gold *Gauntlet* there were also marked similarities between this, Gremlin's *Way of the Tiger 2* and Firebird's high quality Amstrad version of *Druid*

Current US Gold favourites of mine are *Beyond Forbidden Forest*, a follow up to the super creepy 'shoot the monsters' game – and the awesome latest in the *Ultima* series (although not really an arcade game)

Firebird's *Elite*-challenger *Cholo* looked confusing enough for me to believe it really could take on its predecessor and *Sentinel* is of course being raved over by our own John Cook but I was also taken by a cute Spectrum game *The Ghost of Claymorgue Castle*

The other big hit is of course Don Priestley's *Trapdoor* game from Piranha – marvellous atmosphere and superb graphics for the Spectrum version, don't miss it The new Piranha label looks to be very strong, with other interesting releases *Rogue Trooper* and *Nosferatu* being programmed by Design Design which certainly knows how to write good arcade games

Gremlin had a fast and furious ball bouncing game, like a 3D *Bounder* in some ways but the ground moves like a huge conveyor belt rather than the ball which was called *Trailblazer* There was talk of an Amstrad PCW version of *Bounder* although it wasn't on show

Star of the show for me though was probably Digital Integration's *Tomahawk* on the Amstrad PCW – so unexpected and so well done it knocks *Batman* off its perch as the best thing seen on a green screen Also on show at long last was *TT Racer* on the Spectrum which looks like several other motorcycle games but plays superbly

I'm sure we'll be hearing a lot more about most of these games in future columns

Charts

Top Twenty

1	(–)	Super Cycle	Epyx/US Gold
2	(15)	Dan Dare	Virgin Games
3	(6)	Dragon's Lair	Software Projects
4	(1)	Speed King	Mastertronic
5	(–)	Go for Gold	Americana
6	(2)	Thrust	Firebird/Superior
7	(7)	Kane	Mastertronic
8	(3)	Ghosts and Goblins	Elite
9	(9)	Knight Rider	Ocean
10	(4)	ACE	Cascade
11	(5)	Ninja Master	Firebird
12	(10)	Ninja	Mastertronic
13	(14)	Hole in One	Mastertronic
14	(–)	Bump Set Spike	Mastertronic
15	(–)	Kai Temple	Mastertronic
16	(16)	Kick Start	Mastertronic
17	(–)	War Hawk	Firebird
18	(–)	Nightmare Rally	Ocean
19	(13)	Molecule Man	Mastertronic
20	(8)	Green Beret	Imagine

Figures compiled by Gallup/Microscope



Adventures at the Olympia

Tony Bridge brings tidings of great adventure games from the recent Personal Computer World Show in London

There are many computer shows around now most of which cater for a particular model of home micro but probably the most respected and most attended is the *Personal Computer World* show in London, which manages to cover every computer in both games and business software. The Grand Elf braved the crowds to bring you the news of the latest adventures from the cream of the software houses.

First of all let me banish those cherished thoughts you may have that text adventures are still up there in the forefront of computer entertainment, the flavour of the year is arcade conversions, and this was evident at the show from the multitude of arcade machines dotted around the stands.

Despite being just about the oldest enthusiast this side of the counter, the Elf could be found breaking joysticks along with the best of them, though the chap who was rapidly approaching a score of seven million on a gyrating *Space Harrier* machine put my feeble efforts very sharply into perspective. I'm afraid!

I had to admire the courage of those software houses who were displaying machines like *Gauntlet* against their conversions – in this case crowds of players clustered around the arcade version, zapping away furiously in a concerted effort against the Troll armies and flocks of ghastly ghosts, with the fantastic graphics and the attendant thumps, sampled groans and screams and digitised commentary all going to make a sensory experience secondly only to one.

Set against all this is the micro conversion with a couple of squeaks and a pharp. Hardly the same, is it? But still, it'll be a great hit because who can afford to keep feeding in all those ten pences?

What all this means is that most of the larger companies are concentrating their efforts on these arcade conversions rather than adventures. Of the adventures to be seen, most were for exotic machines like the Macintosh and ST.

For example Mirrorsoft has several American games coming up all making use of the hi-res screens of the newer machines, though "coming soon" is *Icon John* for the Amstrad CPC series, which as you'd expect is icon-driven. Haven't seen it, but the picture looks nice.

One of the few mainstream adventures on show was *Hacker II* from Activision. *Hacker I* is not one of my favourite programs but the new game seems to be very much more interesting, with nice graphics enhancing an investigative romp through a previously impenetrable Soviet facility in Siberia.

It will be available for all the American machines to start with followed by the Amstrad and Sinclair ranges 'soon'. Encouraged by the success of such programs as *Mindshadow* and *Borrowed Time* Activision has just formed a new label, Adventa. The aim of this is fairly obvious – it is 'dedicated to the publication of high level graphic/text adventure programs'. For all the usual micros, the first titles will include *Chicago*, *The Sokentooth Affair* and *Traitor*, the first of these which has been written by the Ram Jam Corporation, known for *Valkyrie 17* and *Terrors of Trantoss*.

You'll have gathered from the title that the adventure puts you in the shoes of a gangland hood, thirsty for revenge against the thugs who double-crossed you and landed you in jail. Ram Jam has used their in-house adventure creator, *The Biro* – this allows for intelligent characters, flexible responses and tricky puzzles.

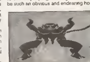
Some months ago, I talked with Ram Jam about this utility and it said then that it was willing to share the program with other major software houses, though it would not be going on general release as a *Quill*-type offering.

Talking of adventure creators, I was looking forward to seeing that from The Edge which is (according to The Edge of course) going to rival anything written by Infocom, but haven't we heard that before? It wasn't anywhere to be seen, so we must wait. I'm sure it's "coming soon".

The fruitful collaboration between Level 9 and Mosaic Publishing continues with *The Archers*, a look behind the scenes of that most enduring soap opera and previewed at the show. The game puts you in the editor's chair from where you must take all the decisions regarding plot decisions for the main characters. For all you Archer fans who have been waiting with bated breath for just such an announcement, now is the hour!

Meanwhile, the Level 9 museum brought a few nostalgic tears to the adventurer's eye with ancient ads and cassette inlays as well as screen shots from those old games. Did you know that Level 9 once challenged the arcades with their version of *Space Invaders?* Nothing new though, except for some stunning digitised pictures on the Amiga to show everyone that Level 9 can dish up the graphics with the best of them (they're just having a bit of trouble incorporating them into the adventures).

The Rainbird stand was also of interest to an adventurer, showing the Level 9 trilogy, *Jewels of Darkness*, though I'm sure you know about that already, along with more versions of *The Pawn* from Magnetic Scrolls. Anita Sinclair, authoress of this most wonderful game tried to explain the trapdoor joke to the Elf (which joke, she tells me, is completely transparent to everyone else in adventuredom), but I'm afraid that he *still* fails to see why a programming fault should be such an obvious and endearing hoot!



From *Jewels of Darkness*

Lord of the Rings part 1 on Commodore 64. How do I get over the last bridge without being captured? Dale Hobson, Broadmeadows, Lambrook Road, Shepton Beauchamp, Ilminster, Somerset TA19 0NA

Zok's Kingdom (Curse of the Werewolf) on Vic 20. I can't get past the room of pits, and can't wake the girl. Also I have not discovered all command words. Robert Turner, 24 Harvest Road, Denmead, Portsmouth, Hants, PO7 6LD

The Pawn of Atari ST. How do I move the boulders? What item does the guru want? Nigel Morse, 11 Green Leafe Avenue, Wheatley Hills, Doncaster, DN2 5RG

Hempstead on Commodore 64. I've visited Chubbie's mansion and been knighted – now what? Shelley Baron, 1A Wayside Avenue, Bushey Heath, Herts, WD2 3SH (01-950 5320)

Mercenary on Commodore 64. What do I do with coffin? I've done all the rest, my score – 1604000. Arthur, P O Box 48, Derby DE6 6QP

I have completed the following (and offer help on) – Jewels of Babylon, Heroes of Karn, Message from Andromeda, Red Moon. Send SAE to Christopher Eng, 14 Amner Road, London SW11 6AA

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....
Name ....
Address ....
....

Sphinx Adventure on Electron. How do I get across the lake? Where can I get the boat? How do I get past the canyon? Carl Hetherington, 29 Upper Packington Road, Ashby-de-la-Zouch, Leicestershire LE6 5ED

Aquanaut 471 on Dragon. Cannot you find way to wear helmet or am I totally wrong? Colin Morrison, 1 Seabank, TJemimaville by Dingwall, Ross-shire

Supercom (Atlantis) on Spectrum. How do you get the third code for the armageddon computer? S A Harrison, 29 Buchanan Street, Stockton-on-Tees, Cleveland TS18 1WP

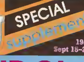
Lord of the Rings on Spectrum. I am stuck in Lothlorien. Cannot cross river or climb tree. Jean Davis, 60 Arch Kyprianos Avenue, Strovolos, Nicosia, Cyprus

Elite on Spectrum+. Lenslok – how do I get into the game? Mr F Dunbobbin, 12 Buttermere Avenue, Orford, Warrington, Cheshire WA2 0NJ

Borrowed Time on Commodore 64. Which P O Box does key open? How to get paper from Leboks Fireplace? Combination for shed? S Ronayne, 8 Turpin Court, North Arbury, Cambridge CB4 2RN

Sinbad and the Golden Ship on Spectrum. Keep getting killed by skeleton or wizard. Kevin Kelly, 30 Poplar Place, Blantyre, Glasgow G72 9QA

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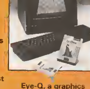
THE SINCLAIR QL

INSIDE

New product news including QL utilities, games, and hardware

Alive and leaping – CST's Thor and Sandy's forthcoming QLT system

Giga Basic and Giga Desk – making the most of the QL's operating system



Eye-Q, a graphics package worth seeing

A dead machine? Not if the QL's thousands of users here and overseas have anything to do with it.

The first affordable 68000-based micro refuses to lie down, apart from a continuing stream of software releases from third parties, manufacturers like CST and Sandy are further refining the QL with their ambitious repackaging and redesigning programs. In this supplement you'll be able to read about the CST Thor, on the market now, and Sandy's planned QLT, both QL-compatible while offering vastly improved specifications.

Communications, graphics, games, basic extensions, WIMP systems, they're all here to prove that the QL is still making quantum leaps even without Amstrad's support. It looks like the QL will be with us for some time to come ◀

Black is the colour

Icicle

Eidersoft's support for the QL is to develop into a continuing program of software and hardware production for the CST Thor system.

Ken Browning explained that Eidersoft, UK distributors of CST's Thor system, will be producing a number of products including a desktop publishing package suitable for use with a laser printer. The system will also be available for the expanded QL, and Eidersoft will be running a laser printing service for users who don't want to invest in an expensive printer.



Also on the way is ICICLE, a development of the popular ICE operating system which offers user-defined icon control from the Psion packages. Upgraded versions of QSpell and other Eidersoft programs are also being prepared for the Thor.

Other projects further in the future may include a serial/MIDI interface board, and a 68020 board which will give a 4-5 fold speed increase.

Eidersoft's QL/Thor support service already has 1200 members, indicating to Ken Browning a continuing enthusiasm for the machine and a sustained demand for product support.

Quanta

The QL users' group QUANTA made a strong appearance at the PCW Show, and is still recruiting new members. Membership is by subscription to the monthly newsletter, which contains a technical advice section, news, software reviews, programs, wants lists and classified ads.

The group maintains a large software library, and arranges workshops for members. Lists of members in a particular area, and membership details, are available from the membership secretary, Brian Pain, at 24 Oxford Street, Stony Stratford, Milton Keynes MK11 1JL.

QATS

QATS, the QL Applications Traffic Supervisor, is a utilities program developed by Gordon Henson of COPE. It's designed to reduce the number of keystrokes needed to perform task manipulation and housekeeping on the QL, and runs from inbuilt menus which can be tailored by the user.

For instance, using QATS you can define a menu called PSION which allows you to choose which of the Psion packages to load. The appropriate program will then start up, and when you have finished your task will return you to the QATS menu.

Using a QL with expanded memory, it's possible to initiate and return from other EXECable jobs, use wildcard file

processing, fast copy files, delete files, format media, manage QL jobs and display files alphabetically showing file sizes

The full package consists of a hefty manual, two microdrive cartridges (which are unprotected and can be transferred to other media) and an EPROM which can save 16K of operating memory Prices are £20 for the base system, £15 for the output control section alone and £10 for the EPROM All prices include p&p, VAT and media costs The output control section alone is capable of print spooling, dividing unformatted files into pages with headings, printing lavels or mailing lists, and allowing for single sheet or continuous stationery

For more details contact COPE, 3 Langham Mansions, Earls Court Square, London SW5 9UH.

DJW joystick

Games players will be pleased to see the arrival of a new and reasonably priced joystick for the QL. The DJW Joystick, at £6.99, has a large circular base with four suckers, a pistol-grip style handle, firing trigger and thumb button, and a long cable with a standard Telecom plug

The DJW stick comes in two parts: the handle pulls out of the base for storage, and connects with a video-type plug

DJW also manufactures Housewife, a "domestic planning" program which includes a shopping list compiler and a cookery book The shopping list allows you to compile, edit and print out lists of around 200 items, using a six-option menu, while the three-part cookery book (starters, main course and desserts) allows you to select a recipe, enter the number of people required, and display the ingredients and quantities required In both cases the text can be printed out for future reference Housewife costs just £4 99

For more details contact DJW Software, 11 Pound Close, Bramley, Hants, RG26 5BL

Q Flash

If you want to improve the performance of your microdrives, but can't afford to upgrade to floppy disks, TK Computerware's QFLASH might be the solution

The QFLASH RAM-disk claims to be up to 12 times faster than other similar programs It enables you to produce pull-down windows in Superbasic, create animation using LBYTES commands, load long machine code programs quickly, and multiply the speed of I/O intensive programs by up to 100 times Using the optional Toolkit, you can also copy microdrives to RAM disk in 7-14 seconds, rename microdrives, patch and repair damaged files and use RAM screen editors in hex and ASCII

Ram Disk costs £13, Ram Toolkit £10, the set on microdrive is £19 and the set on EPROM is £21 For more details contact TK Computerware at Stone Street, Stanford, Nr Ashford, Kent, TN25 6DF 030381 2052

Toolkit 2

Care Electronics' QL Toolkit 2 is now on the market An upgrade of the original Toolkit which was designed to overcome some of the shortcomings of the QL ROM, Toolkit 2 includes commands for file editing, directory control, file maintenance, superbasic expansions, display control, file copying, jobs control, character definition, memory management, error handling, network commands and microdrive handling among others There are over 100 new commands overall

The Toolkit 2 ROM was written by Tony Tebby of QJump Also available from Care is a character font generator, which we'll be reviewing in a forthcoming issue Contact Care at Unit 14, Peerglow Industrial Estate, Old's Approach, Tolpits Lane, Watford, Herts, WD1 8SR 0923 777155

Ambition

Quanta member Alexander Waye has devised a business orientated strategy game, Ambition, which he claims is both entertaining and educational (and also unique!)

Ambition was developed entirely on the QL, and is a four-player game based on land development and building opportunities Each player starts with a £40,000 redundancy payment and a house worth £80,000 Play takes place on a town map divided into four sections, each of which is "home" for one player A simulated dice throw determines the players' moves around the board, while a display at the top of the screen shows the date, move number, position, and sector of each player

The game involves buying and selling building material, dealing with the planning department, hiring tradesmen, developing land and accumulating cash and stock For more details of the game – which Alexander Wave is hoping to develop into a full commercial package – contact him via Quanta or enquire to Care Electronics at the address above.

Astracom 1000

The Astracom 1000 intelligent modem is now available with special QL software thrown in free Suppliers Strong Computer Systems supply the modem, software and serial cable for £173 00 + VAT

The Astracom 1000 features autodial, autoanswer, and printer control facilities. It covers all the standards necessary for European comms networks, and can be upgraded for use with American Bell standards

The on board processor handles all handshaking and buffering necessary for the QL, along with modem and printer functions for auto dialling and auto-answer Modes available include 300/300, 1200/75 75/1200 and 1200/1200, but in auto scan mode the modem will set its own baud rate by sensing the returned carrier tone

Additionally the A 1000 can perform equalisation to improve poor lines, use the centronics printer interface while on line, and generate even parity and local echo for half duplex communications.

The comms software for the QL includes a 40-column colour videotex emulator for Prestel, and a 40/80 column terminal for non-videotex services. A more advanced package called QTERM with XMODEM file transfer capability is on the way

Contact Strong Computer Services at Bryn Cottage Peniel, Caemarthen, Dyfed, SA32 7DJ 0267-231246



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Alive and leaping

LEON HELLER'S LOOK AT PLANS TO EXPAND THE QL FINDS CST AND SANDY WORKING ON EXCITING HARDWARE SYSTEMS

It appears that the QL as we know it is dead, Amstrad, who purchased the QL rights together with the Spectrum from Sinclair, seem determined to let the machine quietly fade away. However, there are around 90,000 enthusiastic users of the machine who might be unwilling to write off their investment in this excellent and under-rated machine, and would be interested in the proposed Thor upgrade announced by CST (to be marketed by Eidersoft in the UK and Dansoft on the continent), and the QL replacement presently being developed by Tony Tebby of QJUMP (he was largely responsible for the original QL design, and wrote the QDOS operating system) and Sandy (the people behind the excellent SuperQboard RAM expansion and disk interface). Users interested in upgrading their machine might find it difficult to decide which of these new machines to go for, so an attempt will be made to compare them on the basis of power, value for money, design, expansion capability, and compatibility with existing hardware and software.

CST is a small company based in Stevenage run by David and Vic Oliver, who have been involved with the QL since it first appeared, supplying a range of interfaces and expansion units. Prior to their involvement with the QL they worked on interfaces for the BBC micro, and did a lot of consultancy work for various companies, mainly in the Cambridge area.

Drives

The Thor is basically an upgrade of the standard QL machine. CST is taking standard QLs, removing the circuit board (the case, keyboard, power supply and Microdrives are discarded) and then mounting the QL board in a strong metal case, with a switch-mode power supply (very efficient and compact), a second board with 512K full-speed expansion memory (giving a total of 640K), disk interface, parallel printer port, one or two 3½" disk drives (floppy or Winchester), a mouse, and six sockets for up to 192 K of ROM (for a WIMP environment, ICE plus, or special purpose software).

A QL-compatible connector for a single peripheral connector (such as an EPROM programmer) is provided and an external four-slot card cage can be connected if the user requires more expansion capability.

CST's Thor QL-based system

The hard disk interface uses the SCSI (Small Computers Standard Interface) standard, and can therefore handle a total of eight devices, which don't have to be hard disks – CD-ROM drives, optical memories and tape streamers could also be connected via the SCSI port, or even other computers, for very high speed data transfer.

A high-quality PC-type separate keyboard is provided, with special driver software in ROM giving all the standard QL functions as well as additional keys for such functions as scrolling the screen, performing a screen dump, etc. Foreign character sets and keyboard configurations are available by changing the driver software.

The CST Thor in close-up

A battery-backed real-time clock is provided, with new driver software in ROM allowing date stamping of files - very useful when backing up files on a hard disk, and a parallel printer port is provided with spooling software in ROM.

Since the Thor is based on the standard QL, there should be no problems when running any of the existing QL software. CST, Eidersoft and Dansoft have an agreement with Psion enabling them to bundle the full 68000 Xchange package (as on the One per Desk) comprising enhanced versions of Quill, Abacus, Archive and Easel with a user friendly interface and a powerful Task Sequencing Language (TSL). The Psion programs will offer full multi-tasking. Qjump's Toolkit II will be incorporated in ROM.

The standard Thor will eventually be capable of being upgraded to a full 32 bit supermicro, using the Motorola MC68020 processor, with an optional 68881 maths co processor. A minimum of 1 Mbyte of RAM will be provided. The graphics will be enhanced, with true hardware windowing.

Prices for the various Thor configurations are as follows.–
With one 3½" drive, £599
With two 3½" drive, £699
With one 3½" drive and one 20Mb Winchester, £1399

Customers will be given an £80 trade-in allowance for their existing machine (provided the circuit board is unmodified). It might be possible to have one's existing 3½" drives incorporated, if they were originally supplied by CST, or they could be used as external drives, as the disk controller can handle up to four floppies.

Qjump is a small company, formed by Tony Tebby a couple of years ago to develop and manufacture high quality QL software and hardware.

The Qjump monitor/debugger and toolkit are very highly regarded, and they also produce an excellent low-cost EPROM programmer for the QL. Jonathan Oakley recently joined Qjump. He worked with Tebby on the original QL.

Sandy are a small Milan-based company with a lot of experience of switch-mode power supply and multi-layer PCB design and manufacture.

The QLT (denoting Quality), instead of being an upgraded QL, is a completely re-designed machine, using the full 16/32 bit MC68000 processor as in the Atari and Amiga machines, giving a 3 to 10 times improvement in performance over the standard QL. The QL uses the "stripped down" 8-bit bus MC68008. The machine does not yet exist, as Tony Tebby and Jonathan Oakley of Qjump are still working on the hardware and software design, so the following description might be subject to change!

The machine will be housed in a low profile metal case with a separate PC-compatible keyboard.

A minimum of 512K of RAM will be provided, expandable to 8Mbytes on the main board. A VME is fited for additional memory and I/O. The VME bus was developed by Motorola for their MC68000 family, and is something of an industry standard. VME-compatible cards tend to be rather expensive, however. A switch mode power supply will be incorporated.

One or two 3½" floppy disk drives will be included. One of the floppies may be replaced by a Winchester, using the SCSI interface, which may also be used to interface other high speed devices.

An interrupt-driven parallel printer port and two interrupt-driven serial ports will be incorporated, as well as a mouse port and a joystick port.

A QL-compatible network facility with enhanced software will be fitted. An additional very high speed synchronous serial port will give high-performance

A Thor graphics demo

communication with intelligent peripherals, making the machine ideal as the basis for sophisticated data logging applications and distributed processing, and a battery backed real-time clock will give automatic date stamping of files.

8-bit ROM cartridges and standard QL 8-bit peripheral cards may be fitted.

Enhanced graphics capability will be provided, with the existing 512 by 256 and 256 by 256 modes available, for existing QL software compatibility. The video controller circuitry will be in the form of a

Sandy's Q-XT gives just a taste of the planned QLT

plug-in module, allowing a much more sophisticated graphics system to be added at a later date, for CAD/CAM applications, for instance.

A very flexible sound generation capability will be provided by a digital/analogue converter, which will be capable of high quality music synthesis and speech synthesis, with appropriate software. The Commodore Amiga and Apple Macintosh use this approach. A MIDI output will be incorporated, for controlling synthesisers and other electronic instruments.

Upgrade

The operating system will be completely re-written (avoiding any legal problems with Amstrad), and will be upwards compatible with QDOS, so most existing QL software should run without any problems.

Either an enhanced version of the SuperBASIC Interpreter will be supplied in ROM, or SuperBASIC in the form of an incremental compiler (giving a substantial speed increase with easy debugging). ISAM file handling might be incorporated (like JETSAM in Amstrad Locomotive BASIC).

It is probable that the Psion Xchange package will be available as an optional extra.

A fully integrated mouse driven pointer, menu and window environment will be provided, with true windowing.

Since the QLT incorporates the VME bus, which supports multiple processors, it will be quite easy to upgrade the machine merely by plugging in an MC68020 VME card, with additional memory cards if required. The existing MC68000 processor would then handle all I/O for the new 32-bit processor, with both processors sharing common memory. Other processors (such as Transputers) could easily be added in the same way.

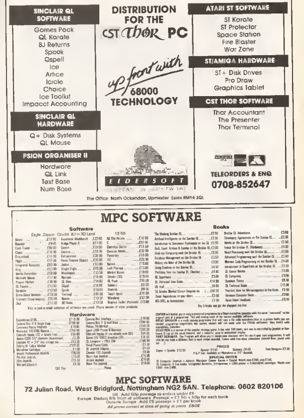
The target price for the QLT is £500 for the basic 512K machine with a single 3½" drive. Adding another floppy disk drive or Winchester will cost about the same as with the Thor: say, £100 for the second floppy and £800 for the Winchester. There is unlikely to be a trade-in allowance for an existing QL.

It might seem strange that the QLT, with a considerably better specification, is likely to be somewhat cheaper than the Thor, but it is based on a single circuit board, whereas the Thor has two circuit boards, resulting in additional hardware and assembly costs. The QL boards used in the Thor will also require testing, which has to be paid for.

My advice is that users with standard unexpanded QLs, who are thinking about upgrading their systems with additional memory and disk drives, should seriously consider ordering a Thor, as they will be getting what amounts to a brand new, considerably enhanced machine, with a full year's warranty, for little more than the cost of, say, a Sandy SuperQboard (additional 512K RAM, disk interface and parallel printer port) and twin disk drives with an Eidersoft mouse and ICE.

Expansion

Users, who like me, have already got a fully expanded machine, might be better off waiting for the QLT, as the CST Thor upgrade doesn't really add very much, apart from the software enhancements, and a neater looking package. In terms of functionality, the expanded standard QL is probably sufficiently powerful for most users at the present time. With its built in VME bus and plug-in video circuitry the QLT offers much better expansion capabilities than the Thor, although these might be provided in the Thor with the MC68020 upgrade. The QLT would appear to be better for more advanced users who need the extra capability, and don't mind waiting a few months. ◀


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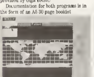

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Windows on the QL

DIGITAL PRECISION'S LATEST QL RELEASES, GIGA BASIC AND GIGA DESK, OFFER EASIER PROGRAMMING AND WIMP FACILITIES. LEON HELLER REPORTS

Giga BASIC and Giga Desk are two programs supplied on Microdrive which enhance the standard SuperBASIC interpreter supplied with the QL, and provide a WIMP (Window, Icon, Mouse, Pointer) environment for the QL. The ABC mouse is required with Giga Desk, and would also be needed if you wanted to access the mouse control functions provided by Giga BASIC

Documentation for both programs is in the form of an A5 30 page booklet



Screen manipulation with Giga Basic

Giga BASIC adds over 70 extensions to SuperBASIC Its functions can be split into the following categories:-

- graphics
- sprites and animation
- numerical base conversions
- full screen SuperBASIC editor
- direct access to media
- multi-tasking clocks
- mouse-driven screen-oriented menus
- pull-down menus
- multi-tasking control commands
- programmable function keys
- other commands

There are far too many features to cover in this review, so I'll just discuss a few of the most interesting ones

Several toolkit type commands are provided for direct file access, such as GET, PUT, BPUT and BGET, SET_POINTER. Jobs may be deleted, suspended or activated from SuperBASIC Software-generated sprites organised in a 32 by 20 matrix are available Sprites may be defined for Mode 4 (four colours, high res) or Mode 8 (8 colours, low res)

Sprites may be moved around the screen, inverted and animated (set in motion automatically), and made to change direction when they reach the borders of the window, or appear at the other side (wrap-around), or killed when they reach a border A function called COLLISION returns the sprite number if two sprites overlay one another, otherwise −1 is returned The location of any sprite can be ascertained

In conjunction with the ABC Mouse, very easy to use menus can be programmed Sprites can be defined, and then used as icons, which can be pointed at using the mouse Macintosh style pull-down menus can be programmed using the MENU command

The function keys, F1 to F5, may be programmed using the KEY command For example,

KEY 1, 'LIST' & chr$(10)

would list a program whenever F1 is pressed.

A full-screen editor for SuperBASIC programs can be activated by typing

SCREEN#dev, linenr, tab

(default is SCREEN#1,1,3)

which invokes the screen editor and positions the cursor at the line assigned to linenr and with the horizontal step size assigned to tab. A full range of editing functions is provided – the cursor may be moved anywhere in the window with the arrow keys, characters deleted, the window paged up or down, etc User-defined fonts may be selected with SETFONT

Real windowing is supported – a window background may be saved in memory before writing to it, and the background restored after the window is closed

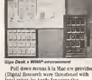
Giga Desk is rather confusingly referred to as EASE (Easily Applicable System Environment) in the manual EASE overlays QDOS and allows the user to carry out all the functions of QDOS, such as file copying or executing programs, using symbols (icons) and the ABC mouse

To get the most from EASE, a machine with expanded memory is required, otherwise, when a program is terminated, EASE will have to reload itself EASE also works much faster on an expanded machine.

In operation, EASE is very easy (!) to use A pointer is displayed on the screen, and may be moved with the mouse. Various icons or symbols are displayed (for instance, pictorial representations of Microdrives or disks), and operations may be performed by pointing at the appropriate icon using the mouse, and clicking the button on top of the mouse

Some useful directory options are provided Files may be sorted by size, by date and by mark. The first two options should be self-explanatory

EASE uses real windows, as described in the section on Giga BASIC, and up to seven windows may be used Windows may be scrolled and moved around the screen



Giga Desk's WIMP environment

Pull down menus à la Mac are provided (Digital Research were threatened with legal action by Apple for using this technique in their first version of GEM, and rapidly changed it. I haven't heard if Apple are making threatening noises about EASE)

Again, in common with the Mac, a built-in calculator is provided, with trig. functions, logs and memory

A version of the well-known sliding block puzzle is provided, again in common with the Mac. I think this is a bit gimmicky

EASE can be patched for use with most hardware configurations (floppy disks, Winchester disk, different printers, etc) When EASE and the ABC mouse were first announced, several of the early customers were disappointed – the mice didn't seem very reliable, and there were problems with the software These problems have now been overcome, and in the short time I had available for testing the system, it seemed to work very well I've not yet had a chance to try the Eidersoft package, so I can't comment on how the ABC system compares with theirs, but Giga Desk (aka EASE) and the mouse appear to work very well, and are recommended if you want the added convenience and fun of a WIMP environment on your QL. ◀



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An eye for QL graphics

JOHN TOROFEX ON THE GRAPHICS PACKAGE WHICH THREATENS TO OUTPERFORM ANYTHING ELSE ON THE QL

DP's **Eye-Q** is a graphics package intended for the production of artistic designs of any size on the QL screen. Designs may be saved to disk or Microdrive, for loading from SuperBASIC, or dumped to a suitable printer. An integral font editor allows different character fonts to be created, which may then be incorporated within the user's own programs.

Freddy Vaccha, the larger than life character who runs DP, tells me that Chacles Southey, who developed Eye-Q, writes everything in assembler – he despises all high level languages. Eye-Q is certainly very fast and slick in operation.

Freehand

The package is supplied on a single Microdrive cartridge, with 18 A4 pages of documentation, punched to fit the QL User Guide, or a suitable binder. The documentation is printed on red paper, to prevent it from being photocopied.

Backing up the package is made very easy by a nicely written clone program, which also configures the package for disk operation if required.

Eye-Q is loaded by a boot program on the cartridge or disk when the machine is reset. The program starts in what is termed 'Top Level', in which you can create freehand sketches with the cursor (a flashing dot). This type of cursor can be rather difficult to see, and I much prefer a cross type of cursor. A status window is displayed at the top of the screen giving information about the cursor position (X and Y co-ordinates), ink/paper colours, plotting mode, etc. The status window can be moved to the bottom of the screen or removed from the screen by pressing F2.

The rest of the screen is the work area, in which one's graphics are created. The area occupied by the status window is also part of the work area, and is re displayed when the status window is moved. The cursor is moved using the arrow keys, and the movement accelerates when the key is held down for more than a second or so. The movement is very smooth and easy to control, and when the cursor hits the edge of the work area it stops. Diagonal movement of the cursor may be achieved by holding down two arrow keys at once, and the cursor may be moved in lacge increments by pressing the ALT key while pressing the arrow key. The cursor position in the status window is constantly updated as the cursor is moved.

With the program in 'SKIP' mode, as it is initially, the cursor doesn't do any drawing. To draw something, the program must be placed in 'SET' mode by pressing F1. Drawing may now be done in the current ink colour. Lines may be erased by pressing F1 again to put the program into 'ERASE' mode, and then drawing with the paper colour to erase the line as required. An additional drawing mode is 'XOR', selected by tapping F1 again. The mode is always indicated in the status window. Thick lines can be drawn, or large areas erased, by altering the cursor width, which is achieved by holding CTRL down and pressing the W key. The maximum cursor size is 32 pixels. The cursor may also be narrowed. Ink, paper and strip colours are easily changed.

Text is easily incorporated in your design simply by typing it in – it will be positioned starting at the cursor location. All the standard character sizes and spacings may be used, and these are easily selected.

Any enclosed are may be filled with colour, by moving the cursor into the area, and pressing F5. A menu will then be displayed, with a list of colours, allowing you to select which colours are to be treated as ink (boundary) and which are to be treated as paper (filled over) colours. This section of the manual is quite complex, and I think the user will need some experimentation to get the desired effect. The area fill function appears to be rather slow.

From the top level one may zoom in to enlarge any small detail of the screen, by pressing F4. The cursor may be moved to any part of the design, with the view displayed so that the cursor is always at the centre of the screen.

A lacge number of commands are provided via a command menu obtained by pressing F3 when at the top level. 'Rubber banding' may be selected, and this feature is operative when drawing circles/ellipses, lines/arcs and rectangles/blocks.

Storage

A files option is provided, so that your works of art may be saved to disk or Microdrive. Character fonts may be loaded and saved. Graphics are saved in compressed form, with a macked reduction in the storage required (each drawing would otherwise take 32K).

A demonstration picture is provided, and this may be loaded and worked on to get the hang of using this very powerful and complex package.

Up to now, the last word in graphics packages for the QL has probably been Talent's GraphiQL. Eye-Q has more features than GraphiQL, and is considerably easier to use, in my opinion. It is also about half the price. Like GraphiQL, one needs a considerable amount of artistic ability to get the most out of it, but it is capable of doing virtually everything the user wants, if he or she has the necessary skills ◀

Product. Eye Q
Micro: Sinclair QL
Price: £24 95
Supplier: Digital Precision, 222 The Avenue, London E4 9SE



Alternative communications

Philip Bridges G6DLJ looks at the latest communication trends in ham radio

We tend to think of micro computing communications as modems, telephone lines and rather higher than average phone bills, however this is not always the case

Computer modems talk to each other by sending conventional tones along a telephone line, a sound channel which carries sequences of hi and low tones

Remember back in your youth when you connected two empty baked bean cans to a piece of string, pulled it tight and talked to your friend at the other end of it? Well daft though it sounds you could use those two baked beans cans as a link between modems as they would effectively act as phone line!

Therefore, most audio circuits will support the use of modems and computers. Radio hams make use of this facility by replacing the conventional telephone line with a two way radio circuit. On the popular VHF band (144MHz) error free two way data transmission is in daily use with a system called AX-25 packet radio which stems from existing 'handshake' principles. 'Handshake' means that a block of data (ie line of text or two) is sent to the receiving station who in turn issues an *OK I've got that, let me have the next message please*. If the transmitting station doesn't receive the OK message it resends it until it gets a reception verification before sending the next block

This all takes place very quickly (typically over 100 characters per second) and because of the OK messages, 100% error free file transfer can be achieved. Of course the use of a radio link does give restrictions of range, the average VHF path is usually about 30–50 miles although greater distances can be obtained with more elaborate equipment

To overcome problems of range, the AX-25 Packet radio system allows messages to 'hop' from station to station, in fact up to eight stations can be used in a daisy chain fashion to pass the message on with full error correcting all the way. One exciting extension of this process has been made by the recent launch of a satellite called JAS-1 which has an on-board memory capable of storing these messages and re-directing them as it orbits the earth

A typical AX-25 Packet radio modem (a TNC, or Terminal Node Controller) performs more or less the same function as a telephone modem but has extra enhancements built in. For example it has a cpu and Ram which is capable of storing text and messages. It is designed to work on their own, the micro being used only to interrogate the contents of the Ram in the TNC. Connection to the micro is usually the standard RS232 set up with a simple bulletin board driver program (dumb terminal)

Each unit will also act as an intermediate station if requested to by another user and many will allow several conversations to take place almost simultaneously, thereby making maximum use of the limited amateur radio spectrum

Packet radio is not used to save money on phone bills of course, the system is still in the experimental stage and is used to pass messages about amateur radio around the UK. Many other countries have allowed radio hams to make use of Packet radio so that shortly a world wide Packet radio network will come into being

Much of the exploratory work being carried out by hams now may have commercial benefits and so generally official licensing bodies in many countries tend to encourage development of the system

Packet radio in its fullest implementation is not yet permitted in the UK but discussions are taking place between the DTI and Radio Society of Great Britain to incorporate it into the UK amateur licence. Radio amateurs are often involved in emergency communications and of course Packet radio could be used very effectively under such circumstances

There are many other ways in which micro computers can be used for communications. For example, most micros have a cassette port which itself is usually an efficient modem, and BBC owners have been plugging their machines into two way radio equipment for several years now sending mode seven screens, *Wordwise* files and programs with very encouraging results

There are several organisations in the amateur radio fraternity which document these techniques widely (incidently, everyone is allowed to listen to amateur radio transmissions not just hams!). It is also worth noting that you do not have to be a technical whizz to become a UK radio amateur, a serious interest in communications is usually enough to set you on the right track

Further information can be obtained from the following

Magazines

There are a few dedicated radio magazines on the market, and also some electronics magazines have good radio sections

Ham Radio Today
Practical Wireless (personally recommended)
Everyday Electronics and EM (Also personally recommended)
Radio Communications Magazine
Amateur Radio

Addresses

Here are the addresses of most of the societies, etc you may wish to contact

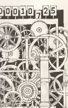
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Hamnet	– 0482 497150 300 baud
Mailbox 80	– 051 428 #924 1200 baud and 300 baud

Furniture

by Richard and Jackie Gain

This week features the final part of this useful utility program which allows you to re-arrange your home until it looks more like a home and less like the inside of a junk shop

```
4080 GO TO 4020
4099 REM MOVE FURNITURE
4100 IF F$(FC,1)="*" THEN LET S1=F(FC,1): LET S2=F(FC1,2): LET X=F(FC1,3): LET Y=F(FC1,4): GO TO 4130
4110 LET X=1, LET Y=174
4120 LET S1=F(FC1,1): LET S2=F(FC1,2): GO SUB 4800
4130 PRINT #0;AT 0,0;"",5,6,7 8=MOVE OBJECT 9=SET STEP=";STEP;"9=TURN 90 DEGREES 0=NEXT OBJECT"
4135 IF INKEY$<>"" THEN GO TO 4135
4140 LET I$=INKEY$: IF I$="" THEN GO TO 4140
4150 IF I$="9" THEN GO SUB 4900
4160 IF I$="0" THEN GO TO 4300
4170 GO SUB 4800: REM REMOVE
4180 LET X=X+STEP*(I$="8" AND X+S1<256-STEP)-STEP*(I$="5" AND X>STEP-1)
4190 LET Y=Y+STEP*(I$="7" AND Y<176-STEP)-STEP*(I$="6" AND Y-S2>STEP-1)
4200 GO SUB 4800: REM REDRAW
4210 IF I$="5" THEN GO TO 4250
4220 GO TO 4140
4250 REM CHANGE STEP
4260 PRINT #0;AT 0,0;"ENTER NEW STEP SIZE (1 TO 8)     ",
4270 LET I$=INKEY$: IF I$<"1" OR INKEY$>"8" THEN GO TO 4270
4280 LET STEP=VAL I$: GO TO 4130
4300 REM SET OBJECT
4310 LET F(FC1,1)=S1
4320 LET F(FC1,2)=S2
4330 LET F(FC1,3)=X
4340 LET F(FC1,4)=Y
4350 LET F$(FC1,16)="*"
4360 GO SUB 2500
4370 PRINT #0;AT 1,0;"PRESS C TO COPY THE SCREEN       PRESS F TO FINISH OR N FOR NEXT"
4375 IF INKEY$<>"" THEN GO TO 4375
4380 IF INKEY$="" THEN GO TO 4380
4390 IF INKEY$="C" THEN COPY : FOR N=1 TO FC: LPRINT N;TAB 4;F$(N): NEXT N
4400 IF INKEY$="F" THEN GO TO 1000
4410 GO TO 4020
4800 REM DRAW OBJECT
4810 OVER 1: PLOT X,Y
4820 DRAW S1,0: DRAW 0,-S2
4830 DRAW -S1,0: DRAW 0,S2-1
4840 OVER 0: RETURN
4900 REM TURN 90
4910 GO SUB 4800
4920 LET T9=S1
4930 LET S1=S2
4940 LET S2=T9
4950 LET X=1: LET Y=174
4960 GO SUB 4800
4970 RETURN
5000 REM SAVE DATA
5010 GO SUB 7000: IF SD=1 THEN GO TO 5500
5050 SAVE *"M";1;S$(1) DATA R()
5060 VERIFY *"M";1;S$(1) DATA R()
5070 SAVE *"M";1;S$(2) DATA F()
5080 VERIFY *"M";1;S$(2) DATA F()
5090 SAVE *"M";1;S$(3) DATA F$()
5100 VERIFY *"M";1;S$(3) DATA F$()
5110 GO TO 1000
5500 PRINT "PREPARE TAPE FOR SAVING"
5510 SAVE S$(1) DATA R()
5520 SAVE S$(2) DATA F()
5530 SAVE S$(3) DATA F$()
5540 GO TO 1000
6000 REM LOAD DATA
6010 GO SUB 7000: IF SD=1 THEN GO TO 6500
6020 LOAD *"M";1;S$(1) DATA R()
6030 LOAD *"M";1;S$(2) DATA F()
6040 LOAD *"M";1;S$(3) DATA F$()
6050 FOR N=1 TO 40: IF F(N,1)=0 THEN LET FC=N-1: GO TO 6070
6060 NEXT N
6070 FOR N=1 TO 40: IF R(N,1)=0 AND R(N,2)=0 THEN LET S=N-1: GO TO 6090
6080 NEXT N
6090 GO TO 1000
6500 PRINT "PREPARE TAPE FOR LOADING & PLAY"
6510 LOAD S$(1) DATA R()
6520 LOAD S$(2) DATA F()
6530 LOAD S$(3) DATA F$()
6540 GO TO 6050
7000 REM TAPE / MDRIVE
7010 CLS : LET SD=0
7020 PRINT #0;AT 0,0;"ARE YOU USING TAPE OR MICRODRIVE?PRESS T OR M"
7030 IF INKEY$="T" THEN LET SD=1
7040 IF INKEY$="M" THEN LET SD=2
7050 IF NOT SD THEN GO TO 7030
7060 IF SD=2 THEN CAT 1
7070 INPUT "ENTER FILENAME PLEASE";I$: IF LEN I$>9 THEN LET I$=I$( TO 9)
7080 FOR N=1 TO 3: LET S$(N)=I$+STR$ N: NEXT N
7090 RETURN
8999 STOP
9000 ERASE "M";1;"FURNITURE": SAVE *"M";1;"FURNITURE" LINE 1
9010 VERIFY *"M";1;"FURNITURE"
9020 STOP
9100 SAVE "FURNITURE" LINE 1
9110 PRINT "REWIND AND PLAY TO VERIFY
9120 VERIFY "FURNITURE
9130 STOP
```



Multi-Dump

by D Farrow

This program will dump a multi-colour hi-res picture to the printer using various degrees of grey ie, a true representation of the picture is printed.

The screen picture should be loaded into the computer at 8192-16191 ($2000-$3F3F) and then the program loaded and run. The shades of grey can be selected with the four function keys and when these are to your satisfaction the picture can be dumped by pressing the left arrow key.

To abort the dump, which takes about 13 minutes on the MPS801, press Run/Stop and Restore.

```
70 FORT=49152TO50184STEP2
80 READA CO=CO+A
90 HI=INT(A/256) LO=A-HI*256
100 POKET,LO POKET+1,HI
110 NEXTT
120 IFCO<>16646045THENPRINT"ERROR IN DATA!" STOP
130 PRINT"DATA O.K.  SYS49152 TO DUMP"
140 END
150
200 DATA15273,4493,43472,36126,53272,55465,5773,43472
210 DATA36097,53288 8589,43472,36096,49383,425,59533
220 DATA43456,36090 4938?,?37 60045,6336,52566 48576
230 DATA49387,3881,2570,2570 59765,6236 59822 48576
240 DATA49387,56733,36280 49381 44568 49386 60549,36288
250 DATA49382,160,58797,39360,1024 153 39173 1536
260 DATA59545,44294,49382,153,39384,55552,152 39386
270 DATA56040,53448,44767,49383 60349,36288 53281,50597
280 DATA16585,64208,50597,1225,5104,1481 8698 1737
290 DATA12272,969 15856,14793,22000 33852 61120 49383
300 DATA59309,51648,53252,43329,36096,49383 57932,61120
310 DATA49384,59565,51648,53252 43305 36096 49384,57932
320 DATA61120,49385,59021 51648,53252 43207,36096,49385
330 DATA57932 61120,49386 60077,51648 53252,43263,36096
340 DATA49386,11884,53104 0 250,259,3087 19456
350 DATA49408,65535,65535,65535,65535,65535,65535,8192
360 DATA169,48416,43519,41476 48964,8447 65486 49184
370 DATA41727 6196,65481,4009 54792 43519,8205 65490
380 DATA53792,6447,65490 2217,53732 43519,36159,50059
390 DATA425,35981,43459,36096 50061,169,36749,36291
400 DATA50064,37261,36291,50066 169,36495 14531,35757
410 DATA60067,50062 34445,44483,50060,233,34701 6359
420 DATA34733,51651,53503,43272 36096,50058,13644,6338
430 DATA34477,10691 36250 50056,34733,10691,36097,50057
440 DATA44312,50056,1577,24189,14531,1705,34285,36291
450 DATA50053,44312,49406,64389,65452 34240 6396 36269
460 DATA19139,19018,33677,44227 50051 49288,61695,6161
470 DATA64421 16489 64389 64677,361 64645,12458 49578
480 DATA44312,50056,63529 34257 6339,64421,34925 34243
490 DATA42491,28156 50057 64645,44312,50061,1833 33677
500 DATA6399 64421 33645 34243,42491 27132,34048,6396
510 DATA34220,47555,50067 23938 6339 43384 34101 40961
520 DATA45312,11771,50052 35469,43459,34103 22529 44312
530 DATA50058,201,3672 457 4648,713 3024,369
540 DATA2000 19992,50058 35406 19651,49678,35500,47555
550 DATA49383,35469 44403 50058,457 3056,716 6432
560 DATA969,18672 56140 6338 36524 44483,50063 39545
570 DATA36291,50063,37037 31171,50092 37005 13651,49383
580 DATA44056,50062 37293 31171,50074,37261 44403 50066
590 DATA41593,36291,50066 44312 50063,43641,36291,50063
600 DATA37037,31171,50096 37005,19651,49863 44056 50062
610 DATA36781,31171,50074 36749,44483 50064 41533,36291
620 DATA50064 44312 50065 39545 36291 50065 37549 31171
630 DATA50062,37517 6339 36781 31171 50090 36749 44483
640 DATA50064,45689 36291 50064,44312 50065 41641,36291
650 DATA50065 37549 31171 50096 37517 61123 50062 36525
660 DATA51651 61447 12459 49485 11800 50065 36910 20163
670 DATA50365 11490,50065,37422 20163 50065 44056 50061
680 DATA37549,2499 36264 52130 37037 2499 36264 52942
690 DATA37293,2499 8320 64130 36531 2499 8320 65430
700 DATA36334,44483 50061,61461 1045 14424 43457,36285
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```
10 DATA65430,1[illegible] 185,9629 65430
720 DATA49352,[illegible] 65490,14304 50858 20[illegible]
730 DATA[illegible]572[illegible] 444[illegible] 59[illegible] 3[illegible] 31651
740 DATA61695 1[illegible] 4309 [illegible] 43519 8146 65475
750 DATA[illegible] 4347[illegible] 561[illegible]
760 DATA55265 [illegible] 16120 [illegible]
770 DATA0 760 [illegible] 1[illegible] 1[illegible]0 0
780 DATA0 0 0 [illegible] 1[illegible]400 [illegible] 12000 [illegible]
790 DATA0,0,0,2050,528[illegible]

READY.
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Road Toad

by Graham Tyson

Road Toad is based on the arcade game Frogger but venes in that once your frog reaches the central riverbank you must leap into the sidecar of the motorbike. Then jump onto the roof of the truck or car before trying to land on the bonus sections of the opposite riverbank.

The program is all machine code giving smooth and, on later levels, very fast animation. The listing is quite long and will be presented over three weeks. So, if you can't face the typing and want a cassette version with a title screen send £2 (no cheque so use recorded delivery) to Graham Tyson, 39 York House, Idlethorp-Way Thorpe Edge, Bradford BD10 9ES



```
100 CALL &BC02:CALL &BB4E:CLEAR:MODE 2:a
ddr=&75d0
101 FOR line=123 TO 487:tot=0
102   FOR n=0 TO 20
103     READ c$
104     datum=VAL("&"+c$)
105     POKE addr,datum
106     addr=addr+1
107     tot=tot+datum
108   NEXT n
109   READ check
110   IF check<>tot THEN 120
111 NEXT line:FOR last=0 TO 4:READ c$:POK
E addr+last,VAL("&"+c$):NEXT last
112 CLS:LOCATE 1,2:PRINT "Machine code p
rogram generated at address:   30000"
113 LOCATE 1,8:PRINT "Set up your TAPE o
r DISC unit"
114 LOCATE 1,10:PRINT "Now type  "+CHR$(
34)+"RUN 121"+CHR$(34);"  [ENTER]"
115 LOCATE 1,12:PRINT "The machine code
program will be SAVEd as:";
116 PRINT " "+CHR$(34);"ROADTOAD.BIN"+C
HR$(34)
117 LOCATE 1,17:PRINT "To RUN from TAPE
or DISC just type: ";
118 PRINT "RUN ";CHR$(34);"ROADTOAD.BIN
"+CHR$(34);CHR$(7)
119 WINDOW 1,80,1,25:END
120 CLS:LOCATE 24,2:PRINT "*** ERROR in
line ";line;" ***":LOCATE 1,12:END
121 SAVE "roadtoad.bin",b,&7530,&1D63,&0
[illegible]:END
122 '
123 DATA [illegible]
E,01 2[illegible],A7,7[illegible],BF,BC,3E,[illegible], 1367
124 DATA 6B,75,CD,BF,BC,3E,01,2[illegible],72,75,C
[illegible] BC,BC,[illegible],79,75,87,[illegible],07, 25[illegible]
125 DATA 10,0F,23,[illegible],01,[illegible],C4,[illegible]
F,23,00,[illegible],23,64,[illegible],[illegible],28,1D,0[illegible] 786
126 DATA 0F,FF,[illegible],02,[illegible],05,[illegible],FF,03,3
E,00,CD,3[illegible],BC,25,3E,01,CD,3[illegible] 766
127 DATA C5,0E,12,CD,35,B[illegible],03,CD,3
5,BC,[illegible],EB,7[illegible],C0,2[illegible],3E,01, 24[illegible]
128 DATA [illegible]
3,C1,CD,32,BC,35,02,C1,CD,32,BF, 2626
129 DATA 3E,01,[illegible],CD,32,BC,3E,[illegible],C5,C
D,32,BC,[illegible],CD,38,BC,16,75,[illegible],CD, 2649
130 DATA 6A,7[illegible],[illegible],[illegible],9B,3[illegible]F
E,F[illegible],28,39,FE,[illegible],28,[illegible],FE,F[illegible],29, 28[illegible]
131 DATA 1[illegible],FE,0[illegible],28,12,FE,F[illegible],28,[illegible],FE
9,28,0F,C3,BF,75,14,14,[illegible],76, 2222
132 DATA 1[illegible],00,[illegible],6F,7A,18,[illegible],2D,45,7[illegible]
5,06,00,21,[illegible],22,59,7F,22,5B, 1929
133 DATA 7[illegible],[illegible],E[illegible],7[illegible],2A,7[illegible],7F,7C,FE,27,3
8,[illegible],20,0[illegible],7D,FE,10,38,0F,[illegible], 170[illegible]
134 DATA [illegible]
F,18,E[illegible],7[illegible],FE,13,2[illegible],20,05,7[illegible],2[illegible]
135 DATA FE,2[illegible],F,1[illegible],58,03,B7,ED,5[illegible]
A,5A,7F,3[illegible],32,5A,7F,18,EE,7C,FE, 2544
136 DATA 0[illegible],20,05,7D,FE,64,38,0F,1[illegible],64,[illegible]
,B7,ED,52,3[illegible],5B,7F,3C,32,5B,7F, 1813
137 DATA 18,E7,7D,FE,0A,38,[illegible],0A,[illegible],B
7,ED,[illegible],3A,5C,7F,3C,32,5C,7F,18, 1874
138 DATA EC,7D,32,[illegible],7F,C9,FE,0[illegible],28,16,F
E,07,38,12,47,21,7E,76,1[illegible],0E,00, 1954
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139 DATA 13,10,FD,11,23,76,01,0E,00 ED B
0,28,14,00,14,00,14,00,1E,00,28, 1412
140 DATA 00,14,00,14,00,1E,00,14,00,14,0
0,1E,00,28,00,14,00,14,00,28,00, 269
141 DATA 1E,00,14,00,1E,00,28,00,14,00,1
4,00,28,00,28,00,1E,00,1E,00,28, 340
142 DATA 00,14,00,14,00,28,00,28,00,28,0
0,28,00,28,00,28,00,1E,00,28,00, 380
143 DATA 28,00,28,00,28,[illegible],00,0
0,00,00,00,00,00,00,00,[illegible] 190
144 DATA 00,00,00,00,00,00,[illegible],0A,75,7F,C
E,0F,20,09,2A,EA,76,22,EE,76,[illegible] 1581
145 DATA 1E,79,FE,27,20,0F,3A,76,7F,FE,0
9,D0,2A,E2,76,22,EE,76,C3,1E,79, 2515
146 DATA FE,3F,20,0F,3A,76,7F,FE,79,D0,2
A,EA,76,22,EE,76,C3,1E,79,FE,57, 2747
147 DATA 20,0F,3A,76,7F,FE,49,D0,2A,E6,7
6,22,EE,76,C3,1E,79,FE,6F,21,53, 2587
148 DATA 0A,[illegible],7F,FE,13,30,[illegible],3A,5F,7F,2
1,2,47,3A,74,7F,B8,30,03,4C,47, 1864
149 DATA 79,90,FE,03,33,1E,CD,93,7A,2A,7
6,7E,11,00,F0,19,22,76,7F,CD,A6, 2085
150 DATA 7A,3E,7B,32,75,7F,2A,E3,76,22,E
E,76,C3,[illegible],74,4E,75,7F,[illegible],32, 2347
151 DATA 7F,7F,CD,93,74,2A,76,7F,11,EF,0
F,27,ED,52,22,76,7F,C9,AF,7?,FE, 2595
152 DATA 76,2D,50,3A,5F,7F,FE,02,D0,[illegible],9
3,7A,3E,AF,32,75,7F,2A,76,7F,3A, 2376
153 DATA EE,7F,FE,0E,3[illegible],0C,11,A0,00,B7,E
D,ED,22,76,7F,[illegible],6F,79,FE,1?,28, 2244
154 DATA 1D,47,3E,10,9[illegible],47,37,11,FF,17,E
D,52,10,F8,[illegible],F0,00,A7,ED,52,22, 2071
155 DATA 76,7F,11,50,00,19,23,E7,FE,[illegible],C
A,6F,79,23,E7,FE,[illegible],CA,6F,79,CD, 2480
156 DATA A0,7A,2A,EA,76,22,EE,76,C3,57,7
9,FE,0F,21,3A,76,7F,[illegible],C0,FE,45, 1926
157 DATA 90,3E,27,32,75,7F,[illegible],7A,2A,7
E,7F,11,F0,[illegible],0F,ED,[illegible],22,76,7F, 2554
158 DATA 11,00,3A,7D,FE,[illegible],2A,76,7
F,11,10,04,0E,0[illegible],CD,47,BC,[illegible],LA, 1281
159 DATA [illegible],1B,3A,FE,[illegible],10,2A,76,7F,1
[illegible],10,04,0E,0[illegible],CD,47,BC,[illegible],4,0F, 1251
160 DATA 1B,26,FE,[illegible],2A,76,7F,11,1
[illegible],04,0E,0[illegible],CD,47,BC,11,28,0[illegible],18, 1295
161 DATA [illegible],FE,44,20,0E,2A,76,7F,[illegible],10,0
[illegible],0E,[illegible],CD,47,BC,11,50,0C,28,EC, 1563
162 DATA 76,19,22,EE,76,CD,A0,7A,CD,57,7
9,06,64,CD,19,BD,10,FB,CD,93,7A, 2699
163 DATA CD,24,[illegible],CD,BA,79,3A,F9,75,3C,3
2,F9,75,FE,02,20,0F,2[illegible],46,C6,22, 2436
164 DATA 69,7F,21,5D,3[illegible],22,7[illegible],7F,[illegible],E7,7
[illegible],FE,[illegible],2[illegible],1F,2[illegible],99,C5,22,67,7F, 2390
165 DATA 21,0A,31,22,6F,7F,C[illegible],E7,78,FE,0
4,2[illegible],0F,2[illegible],66,C4,22,65,7F,2[illegible],E[illegible] 2145
166 DATA 8[illegible],22,6D,7F,[illegible],E7,78,FE,05,20,[illegible]
F,2[illegible],F6,C[illegible],22,63,7F,21,E[illegible],F0,22, 2400
167 DATA 6B,7F,[illegible],E[illegible],7F,FE,0[illegible],2[illegible],1[illegible],3F,[illegible]
2,32,6[illegible],7F,[illegible],8,0B,3A,61,7F,FE,02, 199[illegible]
168 DATA 3[illegible],4,3D,32,6[illegible],7F,1[illegible],62,0[illegible],21,D
4,10,CD,CC,BB,3A,F9,75,FE,64,30, 2175
169 DATA 05,3E,63,32,F9,75,1[illegible],30,FE,1A,3
0,C5,D6,DA,14,16,F7,D5,C6,F6,CD, [illegible]
170 DATA FC,BB,11,[illegible],21,A0,1[illegible],CD,03,0
B,D[illegible],7A,36,F6,CD,FC,BB,C9,3A,7E, 2350
171 DATA 7F,C6,19,32,7[illegible],7F,CD,93,7A,2A,7
6,7F,11,EF,01,37,ED,52,22,76,7F, 2313
172 DATA [illegible],01,9A,19,23,E7,FE,[illegible],2[illegible],30,2
3,E7,FE,01,28,2A,CD,A0,7A,3A,75, 1922
173 DATA 7F,FE,6F,20,08,3A,76,7F,D6,7[illegible],3
2,74,7F,2[illegible],55,75,CD,AA,B[illegible],ED,58, 2500
174 DATA EE,76,2A,79,7F,1[illegible],22,79,7F,CD,F
A,75,CD,2D,7F,C9,CD,A0,7A,2[illegible],5E, 2730
175 DATA 75,CD,AA,BC,06,0A,CD,19,BD,10,F
B,CD,93,7A,2A,76,7F,06,[illegible],CD,29, 2399
176 DATA BC,10,FB,2B,2B,E5,CD,2F,7A,06,3
2,CD,19,BD,10,FB,E1,CD,2F,7A,06, 2491
177 DATA 02,11,70,C7,[illegible]D,[illegible]A,32,3A,78,7F,3
D,FE,0C,28,21,32,78,7F,FE,0[illegible],21, 2145
178 DATA 06,2[illegible],7[illegible],[illegible]7,[illegible]D,05,7F,3E,26,32,7
4,7F,3E,0F,32,75,7F,21,56,C7,22, 1[illegible]43
179 DATA 76,7F,C0,85,7F,C9,E1,ED,58,7[illegible],7
F,3A,39,7[illegible],B[illegible],38,0[illegible],2[illegible],18,3A,38, 2[illegible]
180 DATA 75,BB,30,12,ED,53,3[illegible],75,21,59,7
F,11,38,75,01,05,00,ED,B0,CD,5A, 2011
181 DATA 7C,2[illegible],54,C5,[illegible],1[illegible],48,0E,00,CD,4
7,BC,11,F0,00,2[illegible],76,0[illegible],CD,EA,BB, 2055
182 DATA 36,9A,21,22,74,E5,[illegible]5,7E,CD,FC,B
B,C1,E1,23,1[illegible],F5,06,[illegible],CD,19,BD, 2690
183 DATA [illegible]D,[illegible]9,BB,10,F8,C9,47,41,4D,45,2
[illegible],20,4F,5[illegible],45,52,CD,19,BD,D0,21, 2201
184 DATA EB,02,0[illegible],18,C5,E5,36,0[illegible],E7,DD,A
E,C[illegible],77,23,DD,23,10,F[illegible],E1,CD,26, 2601
185 DATA BC,C[illegible],10,EB,C9,3A,7[illegible],7F,FE,0F,C
2,04,FE,6F,20,18,3A,74,7F,FE,48, 2498
186 DATA 30,[illegible],3[illegible],32,74,7F,CD,93,7A,2A,7
6,7F,23,[illegible]2,76,7F,C[illegible],A[illegible],7A,C9,3A, 2099
187 DATA 75,7F,FE,0F,2[illegible],C4,FE,6F,20,18,3
A,74,7F,FE,0[illegible],38,[illegible]1,3D,3[illegible],74,7F, 1965
188 DATA CD,93,7A,2A,75,7F,23,2[illegible],7[illegible],7[illegible],[illegible]
D,A[illegible],7A,C9,21,D[illegible],7F,ED,5B,76,7F, 2724
189 DATA 06,01,CD,5D,[illegible],[illegible]9,2A,76,7F,[illegible]D,[illegible]
5,7F,C9,7E,42,42,46,46,4[illegible],7E,[illegible]0, 2183
190 DATA [illegible]9,0[illegible],98,08,38,10,1[illegible],[illegible]0,7E,[illegible]2,3
2,7E,40,40,7E,3[illegible],7C,[illegible]4,[illegible]4,7E,06, 996
191 DATA [illegible]6,7E,[illegible],4[illegible],4[illegible],40,60,62,7E,02,0
0,7E,4[illegible],4[illegible],7E,06,46,7E,0[illegible],7[illegible],44, 1422
192 DATA 4[illegible],7E,42,42,7E,[illegible],7E,42,[illegible]4,18,3
[illegible],6[illegible],4[illegible],0[illegible],3C,24,24,7E,42,4[illegible],7E, [illegible]492
193 DATA 0[illegible],7E,42,42,7E,06,06,06,[illegible],0[illegible],0
C,[illegible],[illegible],0[illegible],00,06,00,00,00,00, 402
194 DATA 00,00,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00, 0
195 DATA 00,00,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00, 0
196 DATA 00,00,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00, 0
197 DATA 00,00,00,00,00,11,F6,00,21,F7,7
A,CD,AB,BB,21,A7,7A,1[illegible],[illegible]8,00,06, 1581
198 DATA 0A,3E,F6,F5,C5,D5,E5,CD,A8,BB,E
1,D[illegible],[illegible]9,C1,F1,3C,10,F1,3E,03,CD, 3242
199 DATA DE,BB,AF,CD,59,B[illegible],CD,7A,7D,CC,7
D,9[illegible],CD,F[illegible],8[illegible],CD,B[illegible],81,CD,8E,8[illegible], 3543
200 DATA CD,6[illegible],8[illegible],C[illegible],34,B1,3E,01,CD,71,7
6,21,77,C7,CD,A5,7F,21,7C,C7,CD, 2693
201 DATA [illegible]5,7F,CD,E7,7B,3E,[illegible]3,CD,DE,BB,1
1,0[illegible],C0,21,18,0[illegible],CD,C0,BB,11,DE, 2481
202 DATA 00,21,00,0[illegible],CD,F9,BB,11,0[illegible],[illegible]0,[illegible]
1,EC,FF,CD,F9,BB,11,[illegible],FF,2[illegible],0[illegible], 2195
203 DATA 00,CD,F9,BB,11,00,00,21,14,0[illegible],C
D,F9,BB,[illegible]1,C8,C[illegible],21,DE,00,CD,C0, 2216
204 DATA BB,CD,E7,7B,1[illegible],09,00,21,D8,00,C
D,C[illegible],BB,CD,E7,7B,18,25,11,AE,0[illegible], 2416
205 DATA [illegible],00,00,CD,F9,BB,1[illegible],[illegible]0,00,21,C
C,FF,CD,F9,BB,[illegible],52,FF,21,0[illegible],00, 2243
206 DATA CD,F9,BB,11,20,[illegible],2[illegible],14,00,CD,F
9,BB,C9,[illegible],0D,[illegible],2[illegible],D4,00,[illegible],C0, 2225
207 DATA BB,3E,4[illegible],CD,F[illegible],BB,3E,49,CD,F[illegible],B
B,11,C0,00,21,15,0[illegible],CD,C[illegible],BB,06, 24[illegible]
208 DATA 05,21,78,7F,7E,[illegible]5,E5,CD,F[illegible],BB,E
1,23,C1,10,F5,[illegible]1,CE,01,21,D4,10, 2667
209 DATA CD,[illegible]0,BB,0[illegible],05,21,80,7F,7E,[illegible]5,E
5,CD,FC,BB,E1,23,C1,10,F5,CD,3D, 3059
210 DATA 7F,2A,76,7F,CD,85,7F,11,64,00,2
1,D4,00,CD,C0,BB,21,[illegible],7F,[illegible]D,49, 2304
211 DATA 7F,[illegible]9,3A,73,7F,FE,[illegible],C4,40,7D,F
E,C1,CA,0A,7D,FE,02,28,9[illegible],FE,03, 2506
212 DATA 28,39,3A,75,7F,FE,27,20,1F,2A,6
9,7F,11,44,06,B7,ED,52,EB,2A,76, 2209
213 DATA 7F,B7,ED,52,22,76,7F,7D,FE,44,3
[illegible],07,11,48,00,19,22,76,7F,3A,73, 1976
214 DATA 7F,AF,32,73,7[illegible],2A,69,7F,DD,2A,7
1,7F,CD,1[illegible],B[illegible],DD,E9,3A,73,7F,3[illegible], 3604
215 DATA 32,73,7F,[illegible],E1,7[illegible],3A,75,7F,FE,3
6,C0,2A,9B,7E,11,D2,0[illegible],19,22,76, 2275
216 DATA 7F,C9,3A,75,7F,FE,6F,20,21,ED,5
B,67,7F,21,9B,C5,A7,ED,52,EB,2A, 2717
217 DATA 76,7F,19,22,76,7F,7D,FE,9C,38,0
9,[illegible]1,48,00,AF,ED,5[illegible],22,76,7F,3A, 2069
218 DATA 73,7F,3C,[illegible],73,7F,2A,67,7F,DD,2
A,6F,7F,DD,E9,3A,75,7F,FE,57,20, 2494
219 DATA 1F,2A,65,7F,1[illegible],64,2[illegible],B7,ED,52,E
B,2A,76,7F,B7,ED,52,22,76,7F,7D, 2544
220 DATA FE,64,3[illegible],07,1[illegible],4[illegible],[illegible],1[illegible],22,76,7
F,3A,73,7F,3C,32,73,7F,2A,65,7F, 1724
221 DATA DD,2A,6D,7F,DD,E9,3A,75,7F,FE,A
F,20,23,2A,63,7F,11,F4,C0,B7,ED, 2892
222 DATA 52,EB,2A,76,7F,B7,ED,52,22,76,7
F,7D,FE,F4,30,0B,FE,40,3[illegible],07,1[illegible], 2465
223 DATA 48,00,19,22,76,7F,3A,73,7F,3C,3
2,73,7F,2A,63,7F,DD,2A,6B,7F,DD, 2014
224 DATA E9,21,[illegible]0,[illegible],22,9B,7E,2[illegible],[illegible]1,2
2,59,7F,22,5B,7F,22,5D,7F,2[illegible],1[illegible], [illegible]746
225 DATA 22,5F,7F,3E,10,32,61,7F,3E,0[illegible],3
2,62,7F,21,F5,CC,22,63,7F,2[illegible],65, 1810
226 DATA C4,22,65,7F,2[illegible],9A,C5,22,67,7F,2
[illegible],45,C6,22,69,7F,2[illegible],9C,80,22,6B, 2130
227 DATA 7F,2[illegible],9[illegible],80,2[illegible],6D,7F,21,BE,80,2
2,6F,7F,21,9[illegible],80,22,71,7F,3E,0F, 2045
228 DATA [illegible]C,75,7F,3E,26,32,74,7F,21,5[illegible],[illegible]
7,22,76,7F,3E,[illegible],32,78,7F,[illegible],[illegible],0[illegible], 1679
229 DATA [illegible],22,79,7F,3E,0[illegible],[illegible],F9,75,[illegible]9,[illegible]
A,4B,7E,11,9D,7E,0[illegible],1[illegible],C5,01,[illegible]A, 18[illegible]5
230 DATA 00,ED,B[illegible],01,F6,A7,[illegible]9,3E,BF,9C,3
8,04,01,5C,C0,09,21,10,EA,2A,9B, 2099
231 DATA 7E,1[illegible],[illegible],[illegible],0A,7E,00,CD,47,BC,2[illegible],[illegible]
B,7E,3A,5F,7F,FE,4[illegible],30,0E,[illegible]7,3A, 17[illegible]
232 DATA [illegible]2,7F,3F,8[illegible],32,5F,7F,[illegible],0[illegible],19,[illegible]
[illegible],AF,32,5F,7F,11,DA,FE,[illegible],3A, 1709
```

MemEdit

by Alastair Scott

MemEdit allows you to inspect and change, if possible, any part of the Amstrad Rom or Ram

When run you are prompted for a start address (in hex) between zero and FFFF. Depending on the address various options become available

0-3FFF Ram or Basic Rom. If Ram is chosen MemEdit starts at &170. Don't change any values here – you could crash the computer

4000-BFFF Ram

C000-FFFF 0 = Basic Rom
7 = CP/M or Disc Rom
Any other numbers if you have external Roms fitted

You should now see a page of 128 bytes and their Ascii equivalents. The arrow keys are used to move the inverse cursor around

Copy changes the byte at the current address

S inserts a string (typed from keyboard)

E moves display onto next page

```
30 ON BREAK GOSUB 1170
40 ON ERROR GOTO 1200
50 GOSUB 1010
60 GOSUB 890
70 WHILE TIME
80 GOSUB 720
90 WHILE NOT endflag
100 GOSUB 580
110 GOSUB 150
120 WEND
130 WEND
140 ' Cursor movements
150 x=1:y=1
160 IF NOT change THEN 450
170 CLS#5:PRINT#5,"Arrow keys  COPY change  E end  S string"1
190 WHILE INKEY(58) AND INKEY(9) AND INKEY(60)
200 ad=FNaddr:GOSUB 540
210 PEN#2,0:PAPER #2,2:LOCATE#2,x,y:PRINT#2,HEX$(by,2)
210 dx=0:dy=0:CALL &BB18
220 dy=(NOT INKEY(0))-(NOT INKEY(2))
230 dx=(NOT INKEY(8))-(NOT INKEY(1))
240 PEN #2,1:PAPER #2,0:LOCATE#2,x,y:PRINT#2,HEX$(by,2)
250 x=x+3*dx:y=y+dy
260 IF x<1 THEN x=1 ELSE IF x>22 THEN x=22
270 IF y<1 THEN y=1 ELSE IF y>16 THEN y=16
280 WEND
290 IF NOT INKEY(58) THEN 450
300 IF NOT INKEY (9) THEN 370
310 ' String into memory
320 SOUND 1,150:CLS#5:INPUT#5,"String";s$
330 FOR a=1 TO LEN(s$):POKE ad+a-1,ASC(MID$(s$,a,1)):NEXT
340 GOSUB 580
350 GOTO 170
360 ' Hex entry
370 SOUND 1,150:CLS#5:PRINT#5,SPC(9)"Enter 2-digit hex byte"
380 nx$="":FOR a=1 TO 2:GOSUB 510:nx$=nx$+k$:NEXT
390 LOCATE#2,x,y:PRINT#2,nx$
400 POKE FNaddr,VAL("&"+nx$)
410 LOCATE#3,x\3+1,y:PRINT#3,CHR$(1)CHR$(PEEK(FNaddr))
420 WHILE INKEY$<>"":WEND
430 GOTO 170
440 ' Menu for new address
450 SOUND 1,150:CLS#5:PRINT#5,SPC(4)"A new address  N next  P previous
460 k$="":WHILE INSTR("ANP",k$)<2:k$=UPPER$(INKEY$):WEND
470 IF k$="N" THEN start=start+&80:RETURN
480 IF k$="P" THEN start=start-&80:RETURN
490 endflag=-1:RETURN
500 ' Press valid hex digit
510 k$="":WHILE INSTR("0123456789ABCDEF",k$)<2:k$=UPPER$(INKEY$):WEND
520 SOUND 1,50:RETURN
530 ' Get byte from RAM or ROM
540 IF rom=&FF THEN by=PEEK(ad):RETURN
550 IF rom=&FE THEN CALL &B475,@by,ad:RETURN
560 CALL &B45x,ad,@by,rom:RETURN
570 ' Print 128 bytes with ASCII
580 st=start+co-1
590 FOR a=1 TO 5:CLS#a:NEXT
600 PEN 1:LOCATE 1,1:PRINT"CONTENTS OF ";:IF rom=&FF THEN PRINT"RAM" ELSE PRINT"ROM &"HEX$(rom,2)
610 WHILE co<128
620 ad=st+co
630 IF co MOD 8=0 THEN PRINT#1,HEX$(ad,4)
640 GOSUB 540
650 PRINT#2,HEX$(by,2)" ";
660 PRINT#3,CHR$(1)CHR$(by);
670 co=co+1
680 IF st+co>65536 THEN st+co=0
690 WEND
700 RETURN
710 ' Choose address and ROMs
720 CLS:endflag=0:change=0:by=0:rom=-1:start$=""
730 WHILE start$=""
740 CLS#4:INPUT#4,"Start address &",start$
750 WEND
760 start=VAL("&"+start$)
770 IF start<0 THEN start=65536+start
780 IF start<49152 THEN rom=&FF:GOTO 820
790 WHILE rom<0 OR rom>251
800 CLS#4:INPUT#4,"Which ROM? (0-251) ",rom
810 WEND
820 IF start>16383 THEN 860
830 CLS#4:PRINT#4,"ROM or RAM? (O/A)"
840 r$="":WHILE r$<>"O" AND r$<>"A":r$=UPPER$(INKEY$):WEND
850 SOUND 1,50:IF r$="O" THEN rom=&FE
860 CLS:change=(rom=&FF)
870 RETURN
880 ' List all active ROMs
890 bas=0:by=0
900 CLS:PEN 2:PRINT"   LIST OF ROMS":PRINT:PRINT:PEN 1
910 FOR a=0 TO 251:CALL &B448,@by,a
920 IF NOT bas THEN PRINT"  0 Basic onboard ROM":PRINT:bas=-1
930 IF by<>&80 THEN PRINT USING "###  ";a;
940 IF by=0 THEN PRINT"Foreground ROM"
950 IF by=1 THEN PRINT"Background ROM"
960 IF by=2 THEN PRINT"Extension ROM"
970 NEXT
980 PEN 3:PRINT:PRINT:PRINT"   Press any key"
990 CALL &BB18:SOUND 1,50:RETURN
1000 ' Initialise
1010 DEFINT b-z:DEFREAL a,l,s
1020 PEN 1:MODE 1:BORDER 0:INK 0,0:INK 1,26:INK 2,15:INK 3,6
1030 WINDOW#1,2,6,4,20:WINDOW#2,7,30,4,20
1040 WINDOW#3 31,38,4,20:WINDOW#4,1,40,2,2
1050 WINDOW#5,1,40,23,23
1060 FOR a=1 TO 3:PEN#a,a:NEXT:PAPER#2,0
1070 DEF FNaddr=start+x\3+8*(y-1):cs=0
1080 FOR a=&B440 TO &B48C:READ h$:POKE a,VAL("&"+h$):cs=cs+PEEK(a):NEXT
1090 IF cs<>7854 THEN PRINT CHR$(7)"ERROR IN MACHINE CODE DATA":END
1100 DATA DD,4E,00,CD,15,B9,DD,6E,02,DD,66,03
1110 DATA 77,23,36,00,C9,DD,4E,00,CD,0F,B9,C5
1120 DATA DD,6E,04,DD,66,05,7E,DD,6E,02,DD,66
1130 DATA 03,77,23,36,00,C1,C3,18,B9,CD,06,B9
1140 DATA F5,DD,6E,00,DD,66,01,7E,DD,6E,02,DD
1150 DATA 66,03,77,23,36,00,F1,C3,0C,B9
1160 RETURN
1170 ' ESC pressed
1180 MODE 1:PEN 1:CALL &BC02:END
1190 ' Input error trap
1200 CLS:PEN 1:SOUND 1,200
1210 IF ERR<>13 AND ERR<>6 THEN PRINT#4,"Error"ERR"in line"ERL:END
1220 IF ERR=13 THEN PRINT#4,"Not a valid hex number!" ELSE IF ERR=6 THEN PRINT#4,"Too big a number "
1230 FOR z=1 TO 3000:NEXT
1240 RESUME 720
```

Screen Copy

by Darryn Lavery

The following C64 program takes a copy of the hi-res screen that resides at locations 8192-16191 and places it in the 8k *Ram* underneath the Basic *Rom*. The copy of the screen can later be called up.

To copy the screen enter *Sys 49152* and to recall it enter *Sys 49187*

```
5 REM HI-RES SCREEN COPY BY D LAVERY
10 SUM=0
20 FORT=1TO72
30 READ DA
40 POKE 49151+T,DA
50 SUM=SUM+DA
60 NEXT
70 IF SUM<>[illegible] THEN PRINT"[illegible]SUM ERROR!":END
80 END
100 DATA 143,1,1[illegible],[illegible] [illegible],160 32 [illegible]
110 DATA 160,0 177,251 145,[illegible] 20[illegible] [illegible] 249 [illegible] 230 2[illegible]4 [illegible] 242
120 DATA 230 1 [illegible] 1[illegible]8 1 160 0 1[illegible] [illegible] [illegible] [illegible]
130 DATA 1[illegible] 1,2,254 1[illegible]2 [illegible],160,0 177 253 145,251 [illegible]0,20[illegible],249 230,25[illegible]
140 DATA [illegible]30,254 202 20[illegible],242 [illegible] [illegible]
```

Cursor

by Paul Lambert

This routine for the C64 allows the user to position the cursor anywhere on the screen. Once the program has been run it can be used by entering *Sys 49152 (x position, y position)*

The position of the cursor can also be read by using *Peek 679* and *680* for the x and y co-ordinates respectively

```
10 A=0
20 READ B:POKE 49152+A,B
30 A=A+1:IFB=0THEN END
40 GOTO20
50 DATA 32,250,174,32,158,183
60 DATA 142,167,2,32,253,174
70 DATA32,158,183,142,168,2
80 DATA32,247,174,24,172,167
90 DATA2,174,168,2,32,240
100 DATA255,96,0
READY.
```

Multisize Print

by Robert Murray

The following subroutine for the Spectrum allows the printing of text of any width and height

The variable *h* contains the height, *b* the width and *a$* the text

If the routine is incorporated into a program of your own it should be called with *Gosub 9300*

```
10 LET h=3
20 LET b=5
30 LET a$="Text"
9300 PRINT AT 0,0; INK 7;a$
9310 LET q=0: LET w=0: FOR y=167 TO 175
9320 FOR x=0 TO 63
9330 LET p=POINT (x,y)
9340 IF p=1 THEN PLOT w,q: FOR a=q TO q
+h: PLOT w,a: DRAW b,0: NEXT a
9350 LET w=w+b
9360 NEXT x
9370 LET w=0: LET q=q+h: NEXT y
9380 RETURN
```

We want your programs!!

Yes, this is your chance to get rich and famous. Well, famous anyway, as *Popular Computing Weekly* is looking for contributions to the Programming pages.

What sort of thing are we looking for? You name it – anything original from games to utilities, applications and the like, written in Basic, machine code or anything else you can think of.

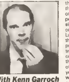
Programs for any computer will be considered, not just the old faithfuls (Spectrum, Amstrad, QL, Commodore, etc) so send those listings in. What we need is a working copy of the program on tape or disc, plus an accompanying article or documentation that you would anticipate going with the program, normally not over 2000 words.

Alternatively, send in your short programs to the Bytes and Pieces page – what could be easier?

In return, we'll pay the princely sum of £25/page for the main programming pages and £5 for each Bytes & Pieces contribution we publish. Plus the fact that your name will be indelibly carved in the *Popular* Programming Hall of Fame till time immemorial. What more could any true programmer ask?

Just send your masterpieces in to **Duncan Evans, Technical Editor, Popular Computing Weekly, 12-13 Little Newport St, London WC2 7PP** and he'll assess them post haste

Programming: Peek & Poke



With Kenn Garroch

Elite commands

M Smith of Balham London SW12 writes

Q I have recently upgraded my Amstrad version of *Elite* from cassette to disc Is it possible to use my old commanders with the disc version?

A Unfortunately no, the commander loader was re-written for the disc version and hence the format it is stored in is different and so unrecognisable to the software You ll have to start zapping and trading all over again

Shedding light

David H Welch of Teignmouth, in South Devon, writes

Q I would like to connect my Amstrad CTM640 colour monitor to the Commodore 128, I realise that they are almost compatible except for one little thing One has a pin called Lum (presumably for luminescence) and the other has a pin called Inten (presumably for intensity) Please tell me how I can connect them or if I can buy an interface.

A Unfortunately the Amstrad monitor, and the 128 s colour output are not compatible The Amstrad is built to take RGB three signals which control each of the three colour guns inside the monitor The C128 on the other hand, puts out composite video, a single coded signal composed of the three colours mixed together The Lum signal is used to control the overall brightness of a pixel, and the Chroma to control the colour Unless you can get a gadget for decoding these into RGB (I don t know of one), there is no way that you are going to get the C128 working with the Amstrad colour monitor

Ram accessibility

A Manorly of Poole, in Dorset, writes

Q I have a Commodore 64 and would like to be able to access all of the 64K of Ram. Could you tell me how this is done?

A The C64 uses a technique called 'bank switching' to manage its memory layout Internally there are three Roms, the kernal containing the operating system routines, the character Rom defining the standard character set and Basic There is also a section of memory dedicated to input/output (I/O) hardware access

I/O
BASIC | Chr | Kernal
64K RAM
0000 A000 C000 D000 E000 FFFF

Underlying all of these is Ram which can be switched in or out with the 6510s I/O register at memory locations 0 and 1 Location 0 is the data direction register for the port at location 1 Only bits 0, 1, and 2 of the port control the memory allocation, the rest are used for the tape control The lower bits must be set to output to control the memory, so Poke 0 7 sets to the DDR to output on bits 0, 1 and 2

These bits are known as Loram Hiram and Charen respectively, they control the memory according to the following truth table

Loram	Hiram	Charen	Ram config
0	0	0	64K Ram
0	0	1	64K Ram
0	1	0	Chr and kernal
0	1	1	Basic Chr and kernal
1	0	0	64K Ram
0	0	1	I/O
1	1	0	I/O and kernal
1	1	1	Basic I/O and kernal

Note that where not stated, the rest of the memory is Ram (see diagram)

Confused by choice

S Wright, from Aberystwyth in Dyfed, writes

Q I intend to buy a computer but am a bit confused as to which to choose between the Amstrad, the Commodore, or the newer Spectrum Plus 2. Could you tell me the differences between the various machines and which one is the best buy?

A Which computer you choose depends on what you want to use it for, playing games, word processing (business use), or programming Of the three you have selected, the best machine for games is probably the Commodore 64 with the Spectrum Plus 2 a close second There are hundreds of games available for these machines with more being released every day In general, the quality of those on the Commodore are superior

For business and programming, the Amstrad is the better bet It has a better keyboard and better built-in Basic than either of the other two I presume you would be looking at the 6128 model which has a fair amount of business software available

To sum up, the Commodore 64 is the best games machine to buy the Amstrad 6128 the best business/programming system Bear in mind that you might get fed up with playing games and want to use the machine for something else

Piqued by Pip

Tony Baker of Fareham in Hants, writes

Q I have recently experienced a problem using the utility CP/M program *Pip Com* on my Amstrad 6128 To copy the file *Test.Bin*, I would normally load *Pip* and then use *'B:=A:Test.Bin*, but I am now getting the error message *File does not exist* However, if I use *'B:=A:*.Bin* then the *Test.Bin* is copied without problems. Having used the latter method, I find that I can then make another copy using the original method which would not work previously.

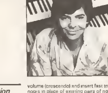
Would you please explain the problem, as I have never had this trouble before?

A Curious at first sight this appears to be a glitch in the disc directory but if, as you say, the file reappears after copying it, there is something very odd going on It could be that the disc was not seated properly the first time or that there is a fault on the disc in the directory tracks

It is unlikely that there is anything wrong with *Pip* since it copied the ambiguous file name The best thing to do is copy everything from the disc, re-format it, and then put everything back Alternatively, copy all the files you have created to another disc re format the dodgy one, and then re create the system files from the master disc

If the problem persists, send the machine back to the manufacturer and tell them that the disc drive is playing up

How to become a musical editor



Mark Jenkins looks at the new Atari package from Kuma

Sorry to keep returning to the Atari 520ST/1040ST micros, which are obviously a bit on the expensive side, but these machines are the best bet musically at the moment once you've exhausted the possibilities of the Commodore 64, BBC or whatever.

Obviously the musical advantages of the Ataris are, a) a reasonable sound chip b) built-in Midi for control of professional synthesisers and c) great operating speed, efficiency and memory capacity.

Kuma's new music package *K Minstrel* makes use of all these facts, offering three channels of composition and playback on the computer alone, or four, eight, 12 or 16 channel playback via Midi. As we've discussed before, getting into Midi isn't all that expensive now – Casio's CZ-101 synth is available at around £190 second-hand and offers eight-note chords of four single notes played with different sounds simultaneously.

In four-channel mode, *K-Minstrel* stores 3200 chords and it's possible to program slurs, triplets, accelerandos and crescendos (changes in speed and volume), so it's quite a powerful package with or without Midi.

The package consists of a single disc and a slim booklet which describes the system as a 'musical display editor'. The basic display is a double musical stave and the pull-down options are *Desk Music* (*Play, New, Load, Save, Quit*) *Sequence* (*Play, Start, End, Copy, Delete, Move, Merge* and *Save*) *Chord* (*Play, Delete, Insert, Mark*), *Select* (*Channel Volume, Tempo, Tempo No Attack, Decay, Sustain*), and *Options* (*Change Key, Change Name, Transpose, Metronome, Print Pages*).

Medium resolution is used so all the text is a little skinny, but the screen display is very clear and at the bottom of the screen there's a choice of note lengths, rest lengths and tempo which allow you to insert your own notes using the mouse.

The demo pieces include a bit of Handel, *The Entertainer, Land Of Hope and Glory* and much more, and you can alter the sounds used by the computer using

> *"Medium resolution is used so all the text is a little skinny, but the screen display is very clear and at the bottom of the screen there's a choice of note lengths, rest lengths and tempo"*



the *Select* page. Each voice is represented in notes of a different colour to aid in composition, and you can enter either single notes or whole chords.

The page number of each screen is indicated as the composition plays and you can load a sequence from disc to insert it after a section you've already completed. You can enter a title for the composition using *Change Name*, select a new key signature with *Transpose* and produce a metronome click if desired.

An Epson-compatible dot matrix printer will transfer your completed composition to paper and, as we've mentioned, you can change tempo (accelerando) during the course of a piece, adjust volume (crescendo) and insert fast triplet notes in place of existing pairs of notes.

Unfortunately the manual has nothing to say about the Midi facilities of the package, so we'll experiment with them in time for our music supplement in a couple of weeks.

K Minstrel is £29.95 and more information is available from Jon Day at Kuma Computers Ltd, 12 Horseshoe Park, Pangbourne, Berks. Tel: 07357 4335.

Just space for a quick letter from Paul Mitchell of Cardiff. Paul wants to know if there's a good multi-voice editor package out there which will allow people like himself to learn the basics of music using a micro, without necessarily needing Midi compatibility.

K Minstrel, in fact, looks like being a good bet here, although you don't mention what micro you're using at the moment. Certainly it will allow you to enter notes or chords in three or more voices and play back your compositions to check your phrasing, but on the other hand, it doesn't actually offer you any help in learning music.

The Advanced Music System on the BBC, C64 and Amstrad machines is in very much the same position, and there is one good tutorial course for micros, the *Colleen Music Compendium*, which teaches you the basics but doesn't really let you enter music to check it out afterwards.

On the C64 and Apple there's Activision's *Music Construction Set* which may answer your prayers, and if you do want to get into Midi there are always the Steinberg packages, which allow you to enter music from a keyboard and then see it transcribed so you know what you've done and can check it for mistakes. But if you do have any queries of this nature in future, it helps if you let us know which micro you're budgeting for!

If you have any queries or tips for this column, please write to Mark Jenkins at *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape, or disc.

The Computer Chess Championships

Martyn Bryant reports on the 1986 World Computer Chess Championships

Martyn Bryant

Kasparov v Karpov may be the talk of the human chess world at the moment but two months ago in West Germany 23 programs pitted silicon brain against silicon brain for the title of World Computer Chess Champion No player interviews no colour coded yogurts, no para-psychologists – just good honest chess ranging from, 'Oh God, that's hopeless to truly sensational

The contestants ranged from the micro-based newcomers to the old-hands with their Cray XMP super computers. The hardware, in the main behaved well with only a few chips getting hot under the collar and any problems were handled sportingly by the human operators The average strength of the programs was down a bit this year due to the absence of ex-world champions *Belle*, *Chaos* and *Nuchess* but the very best programs played some gems with the latest micro contenders performing creditably against their giant cousins

For those of you who may doubt the ability of the best programs, feast your eyes on the following gem in round 2 (see diagram) by *Hitech* (white) against *Schach 2 7* (black) at the end of which *Hitech* announced a mate in 8! (Tournament Director Mike Valvo and Grandmaster Ulastimil Hort didn't even believe it!)

Now how would you judge this position? Both sides have chances Do they? Well let's see – the play went **20** Be2 b5 Bd7xb5 **21** Qh4xh5 Pg6 g5 (needed to avoid **22** Rg1xg6! leading to mate eg, Ph7xg6 **23** Qh5xg6+ etc)

What do you think? White has manoeuvred nicely to increase its King-side attack – but what now? I know you're all looking for the stunning sacrifice but even if you've guessed the right one, can you explain it to completion? Well *Hitech* could It played **22** Be3xg5! *Schach 2 7* wasn't totally convinced so played on for a couple of moves **22** Pf6xg5 **23** Rg1xg5+ Kh8-g8 (not Be7xg5 **24** Qh5xg5+ which also leads to mate) **24** Rd1-g1 Resigns Black has no adequate reply to the mating threat of Qh5xh7+

The finish of the five-round Swiss-style tournament was surely the most exciting ever, with four programs going into the last round with a chance of the championship and three of them being tipped as winners in the last few hours In the end four programs were tied on four points each and the Buchholz system was used to break the tie giving the final result of 1st *Cray Blitz*, 2nd *Hitech*, 3rd *Bebe* and 4th *Phoenix*

Cray Blitz is the first computer chess program ever to retain its world crown (contested every three years), but the general consensus at the tournament was that *Hitech* had played the best chess and achieved the highest tournament performance rating of 2302 *Hitech* runs on specially built chess hardware and its 600K program can search an awesome 175 000 positions per second *Hitech* is now about the 200th ranked US player with a rating of 2352 It has never lost to a play rated below 2250

I'll try to answer all your questions so that all computer chess enthusiasts can benefit If you really need a personal reply then please enclose an sae The questions below seem to be the most commonly asked from our first mailbag

1 How are two chess programs played against each other?

First load up both programs in their respective computers Then get one program to make the first move for white When it has done this, type its move into the second program When it then replies for black type that move back into the first program and so on

2 What literature is there for people beginning to program computer chess?

Try *Computer Chess* (Newborn, Academic Press) *Chess & Computers* (Levy, Computer Science Press) or *The Machine Plays Chess* (Bell. Pergamon)

3 Is Basic fast enough to write a chess program in?

I'm afraid not Chess programs rely on great speed to achieve their playing strength The best programs are written in assembly language which is hundreds of times faster than Basic You can use a compiler to turn high level languages into assembly language but even then it would still be perhaps ten times slower, depending on the efficiency of the compiler

The *Popular* vs *Colossus* game is making steady progress – check this week's Letters page for the game so far and the latest moves for you to enter

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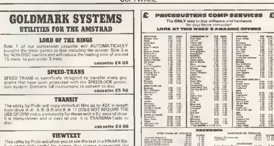
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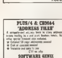
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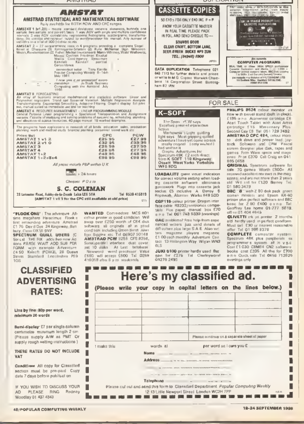
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New Releases

Pick of the week

John Cook looks through this week's new arrivals

Atari

Program *Preppie* **Type** Arcade **Micro** Atari XL/XE **Price** £2 99 **Supplier** Americana Software Unit 2/3, Holford Way, Holford, Birmingham B6 7AX

Program *Silent Service* **Type** Simulation **Micro** Atari XE/XL **Price** £9 95 (tape), £14 95 (disc) **Supplier** US Gold, Unit 2/3, Holford Way, Holford Birmingham B6 7AX

Atari ST

Program *Golf* **Type** Strategy **Micro** Atari ST **Price** £19 95 **Supplier** Anco, 35 West Hill, Darford Kent DA1 2EL.

Program *Silent Service* **Type** Simulation **Micro** Atari ST **Price** £24 95 **Supplier** US Gold, Unit 2/3 Holford Way, Holford, Birmingham B6 7AX

Amstrad CPC

Program *Return to Oz* **Type** Adventure **Micro** Amstrad CPC **Price**' £9 95 **Supplier** US Gold Unit 2/3 Holford Way Holford, Birmingham B6 7AX

Program *Big League Soccer* **Type** Strategy **Micro** Amstrad CPC **Price** £12 95 **Supplier** Viper Software, 36 Old Quarry Close, Rubery

Program *Rebel Planet* **Type** Adventure **Micro** Amstrad CPC **Price** £9 95 **Supplier** US Gold Unit 2/3 Holford Way Holford, Birmingham B6 7AX

Commodore 64

Program *Conan* **Type** Arcade **Micro** Commodore 64 **Price** £2 99 **Supplier** Americana Software Unit 2/3 Holford Way Holford Birmingham B6 7AX

Program *Olympic Skier* **Type** Arcade **Micro** Commodore 64 **Price** £2 99 **Supplier** Americana Software Unit 2/3, Holford Way, Holford Birmingham B6 7AX

Program *Blinker 64* **Type** Utility **Micro** Commodore 64 **Price** £29 90 **Supplier** Information Developments Ltd 24 Deerings Road Reigate Surrey RH2 0PN

Program *Go for Gold* **Type** Arcade **Micro** C6M 64 **Price** £2 99 **Supplier** Americana Software Unit 2/3 Holford Way Holford Birmingham B6 7AX

Go for Gold is what budget software should be all about It s fast and fun and is sure to be a big hit with Commodore sports fans

The events are a good mixture of joystick bashers (the good old 100 metres dash) and those like the weightlifting which require quite a touch to succeed in

The graphics are bnght, with large bold sprites representing the on screen characters and up to six people can play with each taking turns to perform (except the racing where you can play against one other)

Frills Include speech from time to time – and although *Go for Gold* isn t as polished as *Summer Games* for instance for the money it goes straight to the top of the rostrum

Program *Revolution* **Type** Arcade/Puzzle **Micro** Amstrad CPC/Spectrum **Price** £9 95 **Supplier** Vortex Unit 2/3, Holford Way Holford, Birmingham B6 7AX

When you see magazines listing the major UK software houses Vortex is a name that somehow doesn t seem to crop up But when you think about it for a great many years these guys have come up with some consistently excellent games The *Android* games, great in their time then *Tornado Low Level*, *Highway Encounter* and its sequel all stuff you could really get your teeth into Well they ve done it again with *Revolution*

Using the same minimal graphic style of *Encounter*, *Revolution* is a totally original arcarde/puzzle that has an atmosphere all of its own and will keep you glued to the monitor for hours

The concept is simple You control a bouncing ball on a platform of tiles, each grided tile taking up about one screen (between the tiles on one level there is a void from which there is no return)

On each level there are four puzzles to be solved – puzzles that look pretty simple They consist of two blocks somewhere on the tile – all you have to do is touch one of them (which obligingly changes colour) and now must touch the other within short time, otherwise the first block returns to its former state Easy

Add some beautifully designed nasties buzzing to and fro plus assorted unexpected surprises (I won t spoil the fun) and in reality, it's not as easy as you think

Massively addictive, this is another work of programming genius from Vortex s Costa Panayi Out soon on Spectrum and Amstrad CPC, it s simply a must

Program *Room 10* **Type** Arcade **Micro** Commodore 64 **Price** £9 95 **Supplier** CRL Group 9 Kings Yard Carpenters Road, London E15

One day, you know, mankind will live and work among the stars – and naturally in between toiling in the airless wastes and eating his reconstituted Big Mac – he will want to invent new and exciting recreations, as (let s face it) "I spy with my little eye, something beginning with S," would be one of those things that started to get on your nerves after a little while wouldn t it? At least that s the rationale behind *Room 10*, from the CRL stable

Gal Corp (Chairman Sir A Sugar IV probably) have invented several entertainments to pass the time in low gravity, the most popular being in Room 10 of the leisure complex It s called **3D** Pong ohoophs no it isn t sorry it s actually called glyding very sensibly actually, because um because? Oh, who knows? Maybe you have to be wearing thermals to play it or some thing

No don't titter, because despite being, in effect a three dimensional version of that earliest of home video games Pong *Room 10* is great The display consists of two independent screens one on top of the other, each showing a perspective view from the opposing end of the oblong box that is the court

You control a bat that you can manoeuvre about the far wall and the idea is to bounce a ball past your distant opponent They try to prevent this by putting their bat in the way, and long tension filled rallies often ensue You know – just like it used to in you-know-what'

What ever way you look at it, this is Pong 1986 style and it's fabby The Amstrad version has been out for a while, now play it on Spectrum and Commodore

All have one/two player options and if you re trying to hammer the computer, you

can play on several levels of difficulty While the Spectrum version is probably the fastest on Commodore you have the advantage of being able to play two player, both with joysticks – which is advisable as the Restore key hasn t been disabled Naughty

In any case, *Room 10* is well worth looking at, if only to see how far the video game has come in a decade Try it

Spectrum

Program *Fortran Compiler* **Type** Utility **Micro** Spectrum **Price** £15 00 **Supplier** Mira Software 24 Home Close, Kibworth Leics LE8 0JT

Program *Skyplot* **Type** Educational **Micro** Spectrum **Price** £10 00 **Supplier** Mira Software 24 Home Close Kibworth, Leics LE8 0JT

Program *Chess* **Type** Strategy **Micro** Spectrum **Price** £2 99 **Supplier** Elite Systems, Anchor House, Anchor Road, Aldridge, Walsall WS9 8PW

Program *Ole Toro* **Type** Arcade **Micro** Spectrum **Price** £2 99 **Supplier** Americana Software, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX

Program *Timetrax* **Type** Arcade/Adventure **Micro** Spectrum **Price** £9 95 **Supplier** Mind Games Victory House, Leicester Place London WC2

Sweden 1 – England 0 what a fiasco – on top of that hugely ordinary performance over in the New World earlier in the year Depressing, isn t it? And things aren t any better when it comes to computer simulations

Although *Football Manager* is probably one of the biggest selling games in the UK just like the England midfield, it is seriously flawed and showing its age

The match highlights look a bit silly now, but the major flaw has got to be the lack of tactics available to the manager

What if it s the last match of the season and you only need one point? What about if you need three points and what to go for an all out attack? Can t be done Using actual footballing tactics, such as playing all out defence or even the bringing on of substitutes, cannot be done

Not that *Football Manager* is a bad game Only several years on, you d hope for something a little more realistic

Well now there is another football simulation from Viper Software, and it s called *Big League Soccer* And it contains none of the above improvements

Apart from being disc-based and having slightly better match graphics for me there were no significant differences from Amstrad-based *Football Manager* Boo Hiss Starts slow handclap

There is only one solution Sack Ray Wilkins bring me Bobby Robson s head on a plate and someone teach Brian Clough how to program in Z80

Program *Thingy and the Doodahs* **Type** Arcade **Micro** Spectrum **Price** £2 99 **Supplier** Americana Software, Unit 2/3 Holford Way Holford, Birmingham B6 7AX

Americana you might have noticed is the US Gold attempt to get into budget software – and it s fair to say that the output from the label has been patchy

Take *Thingy and the Doodahs* for instance *Thingy* is a collect and dodge game of a fair size (over 200 rooms it says) that looks a bit dated The idea is that you must collect at least 60 pound coins from the house and then go to the computer shop to buy a new Spectrum – seeing as you just broke your old one

In each room there are single colour, two frame animated sprites walking to and fro sometimes chasing you – which you must avoid as you move from screen to screen in your quest for loot Not very fast not very original, not very inspiring not very anything really

Now no one would be complaining about this if it was going for the standard budget £1 99 (not much anyway) as *Thingy* would pass away a wet Sunday afternoon at a push But Americana are asking you to part company with £2 99 for re-living those heady days of 1984

For that money in the budget market nowadays you could get yourself a David Jones game, complete with drop down menus Magic Knight and gung-ho slick arcade action Or a re-issued oldie such as that classic, *Schooldaze*

Thingy just isn t worth that extra quid and although there are some excellent little games in the Americana range, it's crazy that the price a particular program is sold at doesn t reflect the quality

Program *Animator 1* **Type** Utility **Micro** Spectrum **Price** £9 95 **Supplier** Softcat Micro Supplies PO Box 79, Macclesfield, Cheshire SK10 3NP

Animator 1 has been out for a fair while now, but has recently been redesigned and in the words of Softcat "tidied up" so it's well worth another look

What do you get for your tenner? Basically, it s a screen designer, sprite designer and animator, print utility and character designer all in one with an extra program to print your masterpieces out up to 69 feet by 60 feet – assuming you can afford the printer paper

There s no doubt that there is a hell of a lot crammed into this package – but the bad news is that you might find it a little bit inaccessible to start with No drop down menus or icons here so don t expect to be able to get down to work straight away

The program is also a little too fragile – at one point I broke out of it completely, which didn't inspire confidence Imagine that happening during a particularly frantic spell of artistic inspiration?

But in its favour, *Animator 1* does have a wide variety of uses Where else would you get a reasonable art program, a primitive print shop and a font designer (to name but three) for this kind of money – plus the facility for designing and animating sprites?

It's compatible with microdrives or Opus disc and Softcat offer technical support for programmers who need more information about using *Animator 1* as a development system, or people who have non-standard interface/printer combinations

I'd say that considering the range of its applications *Animator 1* is a good deal – if you re willing to put in some effort getting the most from it and don t mind a few rough edges

Joyce versus Joyce

My father is investigating the possibility of buying an Amstrad PCW Joyce By a coincidence my father s secretary is also called Joyce, so I have been wondenng how the two Joyces might compare, should they meet

At present, office reports are usually produced by typing from hand-written notes, usually handed directly to Joyce (the secretary) Typing takes up most of Joyce s time but it is not the most important part of her work She prepares and files statistical information handles quite a bit of accounting and she runs the office

My father and Joyce, therefore, represent a team He is the expert in his particular field and she is the expert in hers which is administration Should Joyce (the PCW) ever join the team then Joyce (the secretary) can expect significant changes to her job

Conventional thinking would place the word processor on Joyce s desk to replace the typewriter, but nothing could be more inefficient Reports would still be hand-written and then typed, so there would be no saving of time Joyce might type faster with the PCW but she already types quickly with few mistakes In any event, correcting spelling mistakes is not word processing

However, if Joyce (the word processor) is placed on my father s desk then an enormous improvement can be expected Reports would be typed directly into the machine and properly word processed paragraphs would be shunted around sentences reworked and spelling corrected, just as with a hand-written draft

An extra bonus could be gained from keeping a stock of template reports so that repetitive passages need only be typed once and then amended as required

Ultimately Joyce (the secretary) could say goodbye to her typewriter and concentrate on office management Better still she could get her own micro and computerise the office systems

People trained as typists might see this as a threat to their jobs However the total number of jobs in a firm might not change much, but the type of jobs would alter

Firstly everyone from the chairman down would need to be able to type in order to use the computing power now essential in modern business This offers current secretaries a temporary advantage over most junior managers for the management jobs of the future

Secondly, the typing pool would become unnecessary This is nothing to mourn for there is no glamour or excitement in a typist s work

Typing also offers few opportunities for advancement However, even with word processors, managers still require personal assistants who would be destined to become managers in their turn

Secretarial posts would, therefore, tend to be filled by ambitious people who would become managers, a more interesting prospect than a lifetime behind a typewriter

Although this bright future appears to be new it is, a return to the time before the invention of the typewriter and before the terms secretary and typist became confused A secretary was a confidant and personal assistant relied upon to relieve the burdens of administration and to offer timely advice This is why senior politicians even now, are called secretaries The secretary of state for war was never called upon to do the army s typing

It was the typewriter which changed the role of the secretary When typed correspondence became the norm, typing fell naturally into the domain of the office administrator, the secretary Managers could not spare the time firstly to learn the skill of touch typing

Because typing took up so much of the secretary s time the role of office administrator was gradually lost and typist and secretary became almost synonymous

By drafting and preparing documents in one process, the desk top computer will change all that and there is a chance that the secretary's role will return to its former importance That is, if the two Joyces can be kept apart

Mike Lloyd

NEXT WEEK

Hardware

The Comx PL-80 low-cost four colour printer/plotter is compatible with Commodores and PCs – which means Amstrad these days We take a look at its performance and its price – it's under £200

Plus the Fantastick 2 joystick – ergonomically designed and suitable for left or right-handed players How does it compare with the competition?

Atari ST – Fast Basic

ST Basic has come in for a fair bit of criticism and now Computer Concepts has come up with an alternative – *Fast Basic*, a Rom-based program for all Atari STs Duncan Evans investigates

Name that film

Our exciting autumn competition reaches its third part with two more science fiction film stills for you to identify

Hackers





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